CRPL-F49

IONOSPHERIC DATA

ISSUED

SEPTEMBER 1948

PREPARED BY CENTRAL RADIO PROPAGATION LABORATORY
National Bureau of Standards
Washington, D.C.

CRPL-F49

CENTRAL RADIO PROPAGATION LABORATORY
NATIONAL BUREAU OF STANDARDS
WASHINGTON, D.C.

Issued
24 Sept. 1948

IONOSPHERIC DATA

CONTENTS

Page

Terminology and Scaling Practices 2

Monthly Average and Median Values of World-Wide Ionospheric Data 4

Ionospheric Data for Every Day and Hour at Washington, D. C. 6

Ionosphere Disturbances 6

American and Zürich Provisional Relative Sunspot Numbers 7

Solar Coronal Intensities Observed at Climax, Colorado 8

Errata 8

Tables of Ionospheric Data 10

Graphs of Ionospheric Data 42

Index of Tables and Graphs of Ionospheric Data in CRPL-F49 64

TERMINOLOGY AND SCALING PRACTICES

The symbols and terminology used in this report are those adopted by the International Radio Propagation Conference, and given in detail on pages 24 to 26 of the report IRPL-C61, "Report of International Radio Propagation Conference," and in the section on "Terminology" in report IRPL-F5.

Beginning with IRPL-F14 the symbol L, defined as follows, is used in detailed tabulations of hourly values of ionosphere characteristics observed at Washington:

L or l = critical frequency, muf, or muf factor for F1 layer omitted because no definite and abrupt change in slope of the h'f curve occurs either for the first reflection or for any of the multiples.

In the past, ionospheric conditions were summarized on a monthly basis by using average or mean values for each hour of the day for each month. However, following the recommendations of the International Radio Propagation Conference, held in Washington April 17 to May 5, 1944, beginning with data for January 1, 1945, median values are published wherever possible.

Where averages are reported, they are, at any hour, the average for all the days during the month for which numerical data exist.

The monthly median values used here are the values equaled or exceeded on half the days of the month at the given hour. The following conventions are used in determining the medians for hours when no measured values are given because of equipment limitations and ionospheric irregularities. Symbols used are those given in the report referred to above, IRPL-C61.

a. For all ionospheric characteristics:
Values missing because of A, B, C, or F (see terminology referred to above) are omitted from the median count.

b. For critical frequencies and virtual heights:
Values of f^oF2 (and f^oE near sunrise and sunset) missing because of E are counted as equal to or less than the lower limit of the recorder. Values of h'F2 (and h'E near sunrise and sunset) missing for this reason are counted as equal to or greater than the median. Other characteristics missing because of E are omitted from the median count. See CRPL-F36, page 9.
Values missing because of D are counted as equal to or greater than the upper limit of the recorder.
Values missing because of G are counted:
1. For f^oF2, as equal to or less than f^oF1.
2. For h'F2, as equal to or greater than the median.
Values missing for any other reason are omitted from the median count.

c. For muf factors (M-factors):
Values missing because of G are counted as equal to or less than the median.
Values missing for any other reason are omitted from the median count.

d. For sporadic E (Es):
Values of fEs missing because no Es reflections appeared, the equipment functioning normally otherwise, are counted as equal to or less than the median f^oE, or equal to or less than the lower frequency count of the recorder.
Values of fEs missing for any other reason, and values of hEs missing for any reason at all are omitted from the median count.

Beginning with data for November 1945, doubtful monthly median values for ionospheric observations at Washington, D. C., are indicated by parentheses, in accordance with the practice already in use for doubtful hourly values. The following are the conventions used to determine whether or not a median value is doubtful:

1. If only four values or less are available, the data are considered insufficient and no median value is computed.

2. For the F2 layer, if only five to nine values are available, the median is considered doubtful. The E and F1 layers are so regular in their characteristics that, as long as there are at least five values, the median is not considered doubtful.

3. For all layers, if more than half of the values used to compute the median are doubtful (either doubtful or interpolated), the median is considered doubtful.

The same conventions are used by the CRPL in computing the medians from tabulations of daily and hourly data for stations other than Washington, beginning with the tables in IRPL-F18.

Beginning with CRPL-F33, an additional group of symbols is used in recording the Washington, D.C. data. The list of additional symbols and their meanings follows:

N - unable to make logical interpretation.
P - trace extrapolated to a critical frequency.
Q - the F1 layer not present as a distinct layer.
R - curve becomes incoherent near the F2 critical frequency.
S - no observation obtainable because of interference.
V - forked record (previously denoted by U. This change should also be made in CRPL-7-1).
Z - triple split near critical frequency.

For a more detailed explanation of the meaning and use of these symbols, see the report CRPL-7-1, "Preliminary Instructions for Obtaining and Reducing Manual Ionospheric Records."

MONTHLY AVERAGE AND MEDIAN VALUES OF WORLD-WIDE IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 43 and figures 1 to 85 were assembled by the Central Radio Propagation Laboratory for analysis and correlation, incidental to CRPL predictions of radio propagation conditions. The data are median values unless otherwise indicated. The following are the sources of the data:

Australian Council for Scientific and Industrial Research,
Radio Research Board:
Brisbane, Australia
Canberra, Australia
Hobart, Tasmania

Australian Department of Supply and Shipping, Bureau of
Mineral Resources, Geophysical Section:
Watheroo, W. Australia

British Department of Scientific and Industrial Research,
Radio Research Board:
Falkland Is.
Fraserburgh, Scotland
Slough, England

New Zealand Radio Research Committee:
Christchurch, New Zealand (Canterbury University College Observatory)
Rarotonga I.

Japanese Physical Institute for Radio Waves (under supervision of
Supreme Commander, Allied Powers):
Fukaura, Japan
Shibata, Japan
Tokyo (Kokobunji), Japan
Wakkanai, Japan
Yamakawa, Japan

National Bureau of Standards (Central Radio Propagation Laboratory):
Baton Rouge, Louisiana (Louisiana State University)
Boston, Massachusetts (Harvard University)
Guam I.
Huancayo, Peru (Instituto Geofisico de Huancayo)
Palmyra I.
San Francisco, California (Stanford University)
San Juan, Puerto Rico (University of Puerto Rico)
Trinidad, British West Indies
Washington, D. C.
White Sands, New Mexico
Wuchang, China (National Wuhan University)

All India Radio (Government of India), New Delhi, India:
Bombay, India
Delhi, India
Madras, India

Radio Wave Research Laboratory, Central Broadcasting Administration:
Chungking, China
Lanchow, China
Nanking, China
Peiping, China

The dashed-line prediction curves of the graphs of ionospheric data are obtained from the predicted zero-muf contour charts of the CRPL-D series publications. The following points are worthy of note:

a. Predictions for individual stations used to construct the charts may be more accurate than the values read from the charts since some smoothing of the contours is necessary to allow for the longitude effect within a zone. Thus, inasmuch as the predicted contours are for the center of each zone, part of the discrepancy between the predicted and observed values as given in the F series may be caused by the fact that the station is not centrally located within the zone.

b. The final presentation of the predictions is dependent upon the latest available ionospheric and radio propagation data, as well as upon predicted sunspot number.

c. There is no indication on the graphs of the relative reliability of the data; it is necessary to consult the tables for such information.

The following predicted smoothed 12-month running-average Zürich sunspot numbers were used in constructing the contour charts:

Month	Predicted Sunspot No.			
	1948	1947	1946	1945
December		126	85	38
November		124	83	36
October		119	81	23
September		121	79	22
August	123	122	77	20
July	125	116	73	
June	129	112	67	
May	130	109	67	
April	133	107	62	
March	133	105	51	
February	133	90	46	
January	130	88	42	

IONOSPHERIC DATA FOR EVERY DAY AND HOUR AT WASHINGTON, D. C.

The data given in tables 44 to 55 follow the scaling practices given in the report IRPL-C61, "Report of International Radio Propagation Conference," pages 36 to 39, and the median values are determined by the conventions given above under "Terminology and Scaling Practices."

IONOSPHERE DISTURBANCES

Table 56 presents ionosphere character figures for Washington, D. C., during August 1948, as determined by the criteria presented in the report IRPL-R5, "Criteria for Ionospheric Storminess," together with Cheltenham, Maryland, geomagnetic K-figures, which are usually covariant with them.

Table 57 lists for the stations whose locations are given the sudden ionosphere disturbances observed on the continuous field intensity recordings made at the Sterling Radio Propagation Laboratory during August 1948.

Table 58 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Brentwood and Somerton, England, receiving stations of Cable and Wireless, Ltd., from August 5 to August 17, 1948.

Table 59 gives provisional radio propagation quality figures for the North Atlantic and North Pacific areas, for 01 to 12 and 13 to 24 GCT, July 1948, compared with the CRPL daily radio disturbance warnings, which are primarily for the North Atlantic paths, the CRPL weekly radio propagation forecasts of probable disturbed periods, and the half-day Cheltenham, Maryland, geomagnetic K-figures.

The radio propagation quality figures are prepared from radio traffic and ionospheric data reported to the CRPL, in a manner basically the same as that described in IRPL-R31, "North Atlantic Radio Propagation Disturbances, October 1943 through October 1945," issued February 1, 1946. The scale conversions for each report are revised for use with the data beginning January 1948, and statistical weighting replaces what was, in effect, subjective weighting. Separate master distribution curves of the type described in IRPL-R31 were derived for the part of 1946 covered by each report; data received only since 1946 are compared with the master curve for the period of the available data. A report whose distribution is the same as the master is thereby converted linearly to the Q-figure scale. Each report is given a statistical weight which is the reciprocal of the departure from linearity. The half-daily radio propagation quality figure, beginning January 1948, is the weighted mean of the reports received for that period.

These radio propagation quality figures give a consensus of opinion of actual radio propagation conditions as reported by the half day over the two general areas. It should be borne in mind, however, that though the quality may be disturbed according to the CRPL scale, the cause of the disturbance is not necessarily known. There are many variables that must be considered. In addition to ionospheric storminess itself as the cause, conditions may be reported as disturbed because of seasonal characteristics, such as are particularly evident in the pronounced day and night contrast over North Pacific paths during the winter months, or because of improper frequency usage for the path and time of day in question. Insofar as possible, frequency usage is included in rating the reports. Where the actual frequency is not shown in the report to the CRPL, it has been assumed that the report is made on the use of optimum working frequencies for the path and time of day in question. Since there is a possibility that all the disturbance shown by the quality figures is not due to ionospheric storminess alone, care should be taken in using the quality figures in research correlations with solar, auroral, geomagnetic, or other data. Nevertheless, these quality figures do reflect a consensus of opinion of actual radio propagation conditions as found on any one half day in either of the two general areas.

AMERICAN AND ZÜRICH PROVISIONAL RELATIVE SUNSPOT NUMBERS

Table 60 presents the daily American relative sunspot number, R_A, computed from observations communicated to CRPL by observers in America and abroad. Beginning with the observations for January 1948, a new method of reduction of observations is employed such that each observer is assigned a scale-determining "observatory coefficient," ultimately referred to Zürich observations in a standard period, December 1944 to September 1945, and a statistical weight, the reciprocal of the variance of the observatory coefficient. The daily numbers listed in the table are the weighted means of <u>all</u> observations received for each day. Details of the procedure will be published shortly. The American relative sunspot number computed in this way is designated R_A. It is noted that a number of observatories abroad, including the Zürich observatory, are included in R_A. The scale of R_A was referred specifically to that of the Zürich relative sunspot numbers in the standard comparison period; since that time, R_A is influenced by the Zürich observations only in that Zürich proves to be a consistent observer and receives a high statistical weight. In addition, this table lists the daily provisional Zürich sunspot numbers, R_Z.

SOLAR CORONAL INTENSITIES OBSERVED AT CLIMAX, COLORADO

In tables 61a and 61b are listed the intensities of the green (5303A) line of the emission spectrum of the solar corona as observed during August 1948 by the High Altitude Observatory of Harvard University and the University of Colorado at Climax, Colorado, for east and west limbs, respectively, at 5° intervals of position angle north and south of the solar equator at the limb computed to the nearest 5°. A correction, P, as listed, has been applied to the position angles of the actual observations which were on astronomical coordinates. The time of observation is given to the nearest tenth of a day, GCT. The tables of coronal observations in CRPL-F29 to F41 listed the data on astronomical coordinates; the present format on solar rotation coordinates is in conformity with the tables of CRPL-1-4, "Observations of the Solar Corona at Climax, 1944-46."

Tables 62a and 62b give similarly the intensities of the first red (6374A) coronal line; tables 63a and 63b list the intensities of the second red (6704A) coronal line. The following symbols are used in tables 61, 62, and 63: a, observation of low weight; -, corona not visible; and x, position angle not included in plate estimates.

ERRATA

1. In CRPL-F47, page 66, figures 76 and 77 should have been grouped with the figures under the heading, "Graphs Superseding Previously Published Graphs," on page 69.

2. In CRPL-F48, the values of foF2 from 1800 to 2200 given in table 55, page 23, were inadvertently omitted from the graph in figure 106 on page 73 of that issue.

TABLES AND GRAPHS
OF
IONOSPHERIC DATA

TABLES OF IONOSPHERIC DATA

Table 1

Washington, D.C. (39.0°N, 77.5°W) August 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	270	5.7						2.7
01	270	5.4					2.3	2.8
02	270	5.1					1.9	2.8
03	260	4.9					2.2	2.8
04	270	4.4						2.8
05	270	4.1						2.9
06	240	5.4			100	2.1	2.5	3.1
07	270	6.0	230	4.1	100	2.7	3.5	3.0
08	310	6.7	210	4.5	100	3.1	3.7	3.0
09	355	6.7	200	4.9	100	3.3	3.7	2.8
10	390	6.6	195	5.1	100	3.6	3.9	2.8
11	450	6.6	200	5.4	100	(3.7)	3.7	2.6
12	435	6.7	200	5.4	100	(3.8)		2.7
13	430	6.8	200	5.4	100	3.9		2.6
14	420	6.9	200	5.3	100	3.8		2.7
15	400	7.0	210	5.3	100	3.7		2.7
16	360	7.0	210	4.9	100	3.5		2.8
17	335	7.1	220	4.7	100	3.0	3.2	2.9
18	260	7.3	230		100	2.4	3.3	2.9
19	250	7.1			100	1.9	1.8	3.0
20	240	7.0						2.9
21	250	6.8					1.9	2.9
22	250	6.2					1.8	2.8
23	260	5.7					2.0	2.8

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 2

Boston, Massachusetts (42.4°N, 71.2°W) July 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	275	6.7						2.6
01	300	6.4					1.4	2.6
02	300	5.4					1.7	2.6
03	280	5.0					1.5	2.6
04	305	4.7					1.7	2.7
05	305	5.6	275	4.3	112	1.9		2.8
06	340	6.1	300	4.9				2.8
07	405	6.5	250	4.9				2.7
08	445	6.9	250	5.0				2.6
09	455	7.0	248	5.0				2.5
10	452	7.3	230	5.3				2.5
11	495	7.4	245	5.4				2.4
12	482	7.1	240	5.2				2.5
13	500	7.4	260	5.2				2.4
14	472	7.4	225	5.2				2.5
15	440	7.5	242	5.0				2.5
16	385	7.2	250	5.0				2.7
17	360	7.5	252	5.0				2.7
18	290	7.8						2.7
19	260	7.8						2.9
20	282	8.0						2.7
21	280	7.7						2.7
22	290	7.4						2.7
23	288	6.9						2.6

Time: 75.0°W.
Sweep: 0.8 Mc to 14.0 Mc in 1 minute.

Table 3

San Francisco, California (37.4°N, 122.2°W) July 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	320	6.0					3.0	2.4
01	320	5.9					2.5	2.4
02	300	5.6					2.6	2.5
03	310	5.4					2.4	2.5
04	300	5.0					2.0	2.5
05	300	5.0					2.5	2.6
06	260	5.8	260	4.0	120	2.4		2.5
07	400	6.6	240	4.7	120	2.9	4.1	2.4
08	400	7.6	220	5.1	120	3.2	4.8	2.5
09	380	8.0	220	5.2	120	3.6	5.0	2.5
10	410	8.4	220	5.4	120	3.8	4.5	2.4
11	400	8.6	220	5.4	120	3.9	4.7	2.5
12	400	8.6	220	5.4	120	4.0		2.5
13	380	8.6	220	5.4	120	3.9		2.5
14	380	8.4	220	5.4	120	3.9	4.8	2.5
15	380	8.3	220	5.3	120	3.8		2.6
16	360	7.8	220	5.2	120	3.4	4.2	2.6
17	355	7.8	240	4.9	120	3.1	4.5	2.6
18	260	7.8	240		120	2.6	3.6	2.7
19	260	7.8					2.8	2.8
20	260	7.6					2.6	2.7
21	260	7.1					2.8	2.6
22	280	6.4					3.8	2.6
23	300	6.0					3.0	2.5

Time: 120.0°W.
Sweep: 1.3 Mc to 18.5 Mc in 4 minutes 30 seconds.

Table 4

White Sands, New Mexico (32.3°N, 106.5°W) July 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	320	6.4					2.8	2.5
01	300	6.3					2.3	2.5
02	300	6.3					2.3	2.6
03	290	6.0					2.5	2.6
04	290	5.6					2.7	2.6
05	300	5.3					3.3	2.6
06	255	6.3			120	2.3	5.1	2.7
07	320	6.8	230	4.9	110	2.9	5.1	2.7
08	370	7.8	220	5.2	110	3.4	5.2	2.6
09	410	8.2	220	5.4	110	3.6	5.2	2.5
10	405	8.6	210	5.5	110	3.9	5.6	2.5
11	400	9.3	220	5.6	115	3.9	5.5	2.4
12	400	9.6	220	5.5	120	3.8	5.3	2.5
13	400	9.8	220	5.5	120	3.9	4.9	2.5
14	400	9.6	220	5.4	120	3.9	5.1	2.5
15	380	9.2	220	5.4	110	3.8	4.7	2.6
16	370	8.8	220	5.3	110	3.6	4.5	2.6
17	350	8.1	240	5.0	110	3.2	4.4	2.6
18	280	7.9	245	(4.4)	110	2.6	4.0	2.7
19	280	8.0					3.0	2.7
20	255	7.9					2.4	2.7
21	260	7.1					3.1	2.6
22	280	6.8					2.8	2.6
23	300	6.5					2.8	2.6

Time: 105.0°W.
Sweep: 0.79 Mc to 14.0 Mc in 2 minutes.

Table 5

Wuchang, China (30.6°N, 114.4°E) July 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	295	8.9					5.0	2.8
01	290	6.6					4.6	2.8
02	270	8.6					4.0	2.9
03	270	6.0					3.4	2.9
04	270	7.6					3.4	2.8
05	270	7.1					2.8	2.8
06	250	8.0			120	2.0	3.2	3.0
07	240	8.7			110	2.6	4.2	3.1
08	252	6.8	225		100	3.4	5.2	3.1
09	290	8.7	230	5.8	100	3.7	6.2	2.8
10	365	8.9	252	6.0	100	3.9	6.4	2.7
11	368	9.9	250	6.0	100	3.9	7.8	2.6
12	370	10.7	250	6.0	100	4.0	6.8	2.7
13	362	11.0	232	6.0	100	4.0	6.0	2.7
14	352	11.4	230	5.8	100	4.0	5.6	2.7
15	340	11.8	235	5.8	100	3.8	5.6	2.8
16	320	11.3	230	5.6	100	3.7	4.6	2.8
17	300	11.3	230	5.3	100	3.3	5.0	2.8
18	285	10.7	250		100	2.8	5.5	2.9
19	270	10.0			110	2.0	5.0	2.9
20	270	8.8					4.2	2.8
21	290	8.8					4.6	2.7
22	308	9.2					5.0	2.6
23	300	9.2					5.0	2.7

Time: 120.0°E.
Sweep: 1.2 Mc to 19.2 Mc, manual operation.

Table 6

Baton Rouge, Louisiana (30.5°N, 91.2°W) July 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	300	6.6						2.8
01	300	6.6					2.7	2.8
02	300	6.3						2.8
03	300	6.0						2.9
04	300	5.6						2.9
05	300	5.6						2.9
06	290	6.2			120	2.3	3.5	3.0
07	300	7.4	240	4.6	120	3.1	3.7	2.9
08	320	8.4	230	5.0	120	3.5	4.3	2.8
09	330	8.6	220	5.3	120	3.7		2.8
10	380	9.6	220	5.6	120	3.8		2.7
11	400	9.2	230	5.7	120	(3.8)		2.7
12	390	9.8	(240)	5.7	(120)	3.8		2.7
13	390	9.7	(240)	5.7	120	(3.7)		2.7
14	390	9.5	(240)	5.7	120	3.7		2.7
15	380	9.0	240	5.5	130	3.7		2.8
16	380	8.8	240	5.3	120	3.6		2.8
17	340	8.6	240	4.8	120	3.4		2.8
18	300	8.3			120	2.6	3.9	2.9
19	300	8.0						2.9
20	290	7.9						2.9
21	290	7.5						2.8
22	290	7.2						2.8
23	300	6.8						2.8

Time: 90.0°W.
Sweep: 2.12 Mc to 15.3 Mc in 5 minutes, automatic operation.

Table 7

San Juan, Puerto Rico (18.4°N, 66.1°W) July 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00		9.1						2.8
01		8.8						2.9
02		8.0						2.8
03		7.5						2.7
04		7.3						2.8
05		7.0						2.8
06		7.1						2.9
07	260	8.0						2.9
08	280	8.8				3.2		2.7
09	330	9.2		5.3		3.6		2.6
10	370	10.4		5.8		3.7		2.5
11	380	11.0		5.8		3.9		2.5
12	375	11.0		5.8		4.0		2.5
13	385	11.2		5.8		4.0		2.5
14	370	11.5		5.6		4.0		2.5
15	370	11.5		5.4		3.8		2.6
16	360	11.0		5.2		3.6		2.6
17	335	10.3				3.2	4.2	2.6
18	300	10.0						2.7
19	290	9.8						2.7
20		9.4						2.7
21		9.3						2.6
22		9.1						(2.7)
23		9.1						2.7

Time: 60.0°W.
Sweep: 2.8 Mc to 13.0 Mc in 9 minutes, supplemented by manual operation.

Table 8

Guam I. (13.6°N, 144.9°E) July 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	335	9.4					3.8	2.6
01	320	8.7					3.0	2.6
02	310	(8.0)					2.3	(2.7)
03	280	(7.6)					3.6	(2.8)
04	240	7.8					1.8	3.0
05	225	8.0					3.0	3.2
06	250	6.8					3.6	3.1
07	240	8.4					5.0	3.1
08	230	9.3					4.8	2.8
09	220	9.9					5.0	2.6
10	220	10.5					6.2	2.4
11	220	10.6					6.2	2.3
12	220	11.6	210	6.2			5.8	2.3
13	210	12.2		6.1			5.5	2.3
14	415	12.6	210	6.0	110		5.0	2.3
15	220	13.0		(6.0)	110	4.0	5.5	2.2
16	220	13.7	220	5.8			5.0	2.4
17	240	13.7					5.2	2.6
18	260	13.4					5.2	2.5
19	300	12.3					4.8	2.4
20	370	11.0					4.6	2.3
21	390	10.4					2.5	2.3
22	370	(9.7)					2.6	(2.4)
23	350	(9.3)					3.2	(2.5)

Time: 150.0°E.
Sweep: 1.25 Mc to 19.0 Mc in 12 minutes, manual operation.

Table 9

Trinidad, Brit. West Indies (10.6°N, 61.2°W) July 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	260	10.8						2.9
01	260	9.9						2.8
02	250	9.2						2.8
03	270	8.7						2.8
04	260	8.2						2.9
05	260	7.5						2.9
06	260	7.5			120	(1.5)	2.4	2.9
07	250	8.2			120	2.8	3.4	3.0
08	230	8.6			120	3.4	4.3	2.8
09	300	9.7	220	5.2	120	3.7	4.4	2.7
10	340	10.7	220	5.8	120	3.9	4.5	2.6
11	340	11.3	220	5.8	120	4.1	4.6	2.5
12	380	11.9	220	5.8	120	4.2	4.6	2.5
13	370	12.2	220	5.9	120	4.1	4.8	2.6
14	370	12.2	220	5.8	120	4.1	5.0	2.6
15	360	12.0	230	5.7	120	3.9	4.9	2.6
16	330	11.6	230	5.2	120	3.6	4.8	2.6
17	300	11.2	240	4.9	120	3.1	4.7	2.6
18	270	10.7			120		4.3	2.6
19	290	10.5					2.8	2.5
20	320	11.1					2.8	2.5
21	300	11.4					2.4	2.6
22	300	11.5					2.0	2.7
23	280	11.3						2.8

Time: 60.0°W.
Sweep: 1.2 Mc to 18.0 Mc, manual operation.

Table 10

Palmyra I. (5.9°N, 162.1°W) July 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	270	(10.0)						(3.0)
01	270	(10.0)						(2.9)
02	270	(10.0)						(2.9)
03	260	(10.0)						(2.9)
04	240	(8.8)					1.6	(3.1)
05	240	7.3					1.7	(3.0)
06	250	5.6			130		2.1	(3.0)
07	255	7.5			110	2.5	2.0	2.9
08	240	8.4			110	3.3		2.7
09	250	9.4	230		120	3.8		2.5
10	270	10.0	230		120	4.0		(2.3)
11	270	10.7	220		120	4.3		(2.3)
12	280	11.2	220		120	4.4		(2.3)
13	280	11.3	220		120	4.3		2.2
14	270	11.4	220		120	4.3		(2.2)
15	260	11.5	220		120	4.0		2.3
16	250	11.8	230		115	3.5	4.2	(2.3)
17	240	(11.3)			120	3.1	4.4	(2.3)
18	270	(11.2)			120	3.3	3.8	(2.3)
19	330	(10.2)					2.6	(2.2)
20	420	(9.4)					1.7	(2.2)
21	400	(9.2)						(2.3)
22	340	(10.3)					1.8	(2.4)
23	300	(10.4)					1.8	(2.7)

Time: 157.5°W.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 36 seconds, automatic operation; 13.0 Mc to 18.0 Mc, manual operation.

Table 11

Huancayo, Peru (12.0°S, 75.3°W) July 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	240	7.9						2.9
01	240	7.7						3.0
02	240	7.2						3.0
03	250	6.0						3.0
04	250	5.0						3.0
05	270	4.3						3.0
06	310	4.7				1.4	2.8	2.7
07	270	7.8				2.5	7.2	2.9
08	250	9.8				3.1	11.8	2.7
09	240	10.2	235	5.4		3.6	12.1	2.5
10	230	10.0	230	5.5		3.9	12.8	2.3
11	230	10.1	220	5.5		4.0	12.8	2.3
12	300	9.8	220	5.5		4.0	12.8	2.2
13	290	9.8	220	5.5		4.0	12.8	2.2
14	230	9.7	220	5.5		3.9	12.6	2.2
15	230	9.8				3.5	12.6	2.2
16	250	9.6				3.0	11.9	2.2
17	280	9.4				2.4	10.8	2.2
18	330	8.8				1.3	1.8	2.2
19	370	8.0						2.2
20	340	8.2						2.3
21	285	8.4						2.4
22	260	7.9						2.6
23	245	8.2						2.8

Time: 75.0°W.
Sweep: 16.0 Mc to 0.5 Mc in 15 minutes, automatic operation.

Table 12

Wakkanai, Japan (45.4°N, 141.7°E) June 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	270	8.1					3.0	2.7
01	280	7.9					2.8	2.7
02	260	7.6					2.4	2.7
03	270	7.5					2.3	2.7
04	280	7.5				1.7	2.5	2.7
05	280	8.3	225		100	2.5	3.4	2.8
06	300	8.7	215		100	3.0	4.1	2.8
07	300	8.7	210		100	3.4	4.8	2.8
08	345	8.4	205		100	3.6	6.2	2.8
09	375	7.9	200		100	3.8	6.7	2.7
10	390	7.9	210	5.2	100	3.9	6.6	2.7
11	390	8.0	200	5.7			5.6	2.7
12	380	8.0	200	5.6	100		5.6	2.7
13	395	7.8	200	5.6	100		6.0	2.7
14	380	7.8	200	5.6	100		5.0	2.7
15	375	7.9	200	5.2	100		5.6	2.7
16	345	8.0	230	4.8	100	3.6	6.2	2.8
17	310	8.0	215		100	3.2	6.4	2.8
18	290	8.1			100	2.5	7.1	2.9
19	270	8.0				-	5.6	2.9
20	260	8.3					6.0	2.7
21	270	8.2					4.1	2.7
22	290	8.2					3.8	2.7
23	280	8.2					3.6	2.7

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc, manual operation.

Table 13

Fukaura, Japan (40.6°N, 139.9°E) June 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	310	8.5					4.1	2.5
01	310	8.6					3.6	2.6
02	300	8.2					3.4	2.6
03	300	7.8					3.2	2.6
04	300	7.7				(1.5)	2.8	2.8
05	300	8.3	260		110	2.2	3.2	2.7
06	300	9.1	260		115	2.8	4.3	2.6
07	330	9.4			110	3.4	5.0	2.8
08	350	9.3			120	3.6	6.4	2.7
09	390	9.0		(5.4)	120	4.0	6.2	2.6
10	400	9.0		5.6	120	4.0	6.4	2.6
11	400	9.0		5.6			6.2	2.6
12	400	9.0		5.8			6.8	2.5
13	400	9.1		5.6	110	3.9	6.8	2.6
14	400	9.0		5.6	110		6.5	2.5
15	390	9.1		5.5			6.8	2.6
16	390	9.0			110	3.5	6.6	2.6
17	350	8.6	260		120	3.2	8.8	2.7
18	320	8.5	240		110	2.5	6.4	2.6
19	300	8.6					6.8	2.7
20	300	8.3					6.0	2.6
21	310	8.4					5.0	2.5
22	320	8.5					5.0	2.5
23	320	8.6					3.8	2.5

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc, manual operation.

Table 14

Peiping, China (39.9°N, 116.4°E) June 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02		8.5						
03		8.3						
04		8.5						
05		8.6						
06		9.2						
07		10.2						
08								
09								
10		11.2						
11		11.8						
12		12.0						
13		11.7						
14		12.1						
15		11.3						
16								
17								
18		10.5						
19		10.6						
20		10.0						
21		9.4						
22		9.0						
23		9.0						

Time: 120.0°E.
Sweep: 1.7 Mc to 20.0 Mc in 15 minutes, manual operation.

Table 15

Shibata, Japan (37.9°N, 139.3°E) June 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	(300)	9.0					4.2	2.6
01	300	9.0					3.9	2.7
02	280	8.8					3.9	2.8
03	280	8.3					3.6	2.7
04	285	8.1					3.0	2.7
05	265	8.4	230		110	2.4	3.4	2.7
06	275	9.5	220		100	2.9	4.6	2.8
07	300	9.8	220		100	3.4	5.3	2.8
08	320	9.3	220		100	3.6	6.3	2.8
09	370	9.2	210	(5.2)	100	3.8	6.6	2.7
10	405	9.1	205	5.6	100	4.1	6.8	2.6
11	400	9.1	200	5.6	100	4.0	6.4	2.5
12	400	9.7	210	5.8	100	4.1	6.4	2.6
13	380	9.8	220	5.7	100	4.2	7.2	2.7
14	380	9.4	220	5.6	100	4.1	6.3	2.7
15	370	9.3	240	5.5	100	3.9	7.0	2.7
16	360	9.4	225		100	3.6	7.2	2.8
17	315	9.3			100	3.2	6.6	2.8
18	300	9.2	240		100	2.8	6.6	2.9
19	265	9.0					5.2	2.8
20	280	9.0					4.8	2.8
21	310	9.0					5.4	2.6
22	315	8.9					5.0	2.6
23	300	9.1					4.3	2.7

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 16

Tokyo, Japan (35.7°N, 139.5°E) June 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	325	9.1					5.1	2.5
01	310	9.1					4.6	2.6
02	300	8.8					4.0	2.6
03	305	8.3					3.2	2.6
04	300	8.1					3.0	2.6
05	280	8.3	250		110	2.2	3.4	2.7
06	290	9.2	250		110	2.8	4.3	2.7
07	300	9.8	230		100	3.4	5.3	2.7
08	335	9.6	230		100	3.6	6.4	2.6
09	375	9.4	220		100	3.8	6.8	2.5
10	420	9.2	215		100	3.9	8.3	2.5
11	420	9.7	200		100	4.0	6.2	2.5
12	410	10.0	240		100		6.2	2.5
13	400	10.1	250	5.8	110		7.0	2.5
14	380	10.0			110		7.4	2.5
15	380	10.0	250		100	3.9	5.7	2.6
16	370	9.4	250		100	3.6	8.4	2.6
17	350	9.5	250	5.0	110	3.2	5.6	2.7
18	320	9.4	245		110	2.4	5.4	2.7
19	300	8.8					5.5	2.7
20	320	8.7					5.4	2.6
21	320	8.7					5.0	2.5
22	340	9.0					5.5	2.5
23	330	9.1					5.0	2.6

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 17

Yamakawa, Japan (31.2°N, 130.6°E) June 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	310	9.8					4.6	2.6
01	300	10.0					5.0	2.7
02	290	9.6					4.2	2.7
03	300	8.6					4.2	2.6
04	300	8.0					3.4	2.6
05	300	7.9					3.2	2.6
06	280	8.8	260		110	2.2	3.6	2.7
07	280	9.5	235		110	2.8	5.0	2.8
08	290	9.2			110	3.5	5.6	2.7
09	350	9.4	230		110	3.6	6.8	2.6
10	395	9.6	210		110	4.0	7.0	2.5
11	410	10.4	240	5.6	120	4.3	7.0	2.4
12	410	10.4	230	5.6			7.5	2.4
13	400	11.0	240	5.6		4.2	6.8	2.5
14	400	10.9	220	5.4			6.9	2.5
15	390	10.9	230	5.3		4.2	6.2	2.6
16	380	11.0	230	5.0	110	3.6	5.8	2.6
17	350	10.6			110	3.5	5.4	2.6
18	300	10.6			120	3.0	5.5	2.7
19	290	9.9			110	2.2	4.9	2.8
20	300	9.4					5.0	2.7
21	320	9.2					4.0	2.5
22	320	9.5					3.6	2.5
23	330	9.6					3.8	2.5

Time: 135.0°E.
Sweep: 0.6 Mc to 18.5 Mc in 15 minutes, manual operation.

Table 18

Chungking, China (29.4°N, 106.8°E) June 1949

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	320	10.3					4.5	2.5
01	300	9.7					4.9	2.7
02	300	8.8					4.2	2.7
03	300	8.2					4.0	2.6
04	290	8.0					2.8	2.5
05	265	8.2					3.2	2.6
06	250	9.0					4.6	2.8
07	270	9.6	240				5.9	2.7
08	300	10.0	240		100	3.6	7.5	2.6
09	300	10.1	240		100	3.8	8.6	2.5
10	360	10.5	235				8.0	2.4
11	420	11.2	220	6.4	100	4.0	8.2	2.4
12	400	11.9	240	6.3	100	4.1	8.0	2.5
13	390	12.4	215	6.2	100	4.2	8.0	2.5
14	370	13.0	220	6.2	100	4.0	7.0	2.5
15	360	13.2	220	5.8	90	4.0	6.4	2.5
16	340	12.9	240	5.6	100	3.6	4.9	2.5
17	320	12.4	240		90	3.4	4.8	2.6
18	310	12.2	280			(2.8)	4.8	2.7
19	290	11.7					4.5	2.6
20	290	11.0					4.3	2.6
21	305	10.2					4.5	2.5
22	300	10.1					4.2	2.5
23	310	10.2					4.3	2.6

Time: 105.0°E.
Sweep: 1.7 Mc to 20.0 Mc in 15 minutes, manual operation.

Table 19

Brisbane, Australia (27.5°S, 153.0°E) June 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	250	4.9						2.8
01	270	4.7						2.9
02	260	4.8					2.0	2.8
03	270	4.9					2.0	2.8
04	260	4.9					2.0	2.8
05	250	4.7					2.0	2.8
06	240	4.6						3.0
07	220	7.6			145	2.2		3.3
08	230	10.0			100	2.8		3.4
09	230	11.0	220		100	3.4		3.3
10	240	11.4	220		100	3.6		3.3
11	240	10.9	210		100	3.7		3.1
12	250	10.6	220	4.5	100	3.7		3.0
13	250	10.3	210	5.2	100	3.6		3.0
14	240	10.3	210	4.4	110	3.5		2.9
15	250	10.4	220		110	3.2	2.1	2.9
16	240	10.0			110	2.7	2.0	3.0
17	230	9.5					2.5	3.0
18	215	8.1					1.8	3.0
19	230	7.0					1.7	3.0
20	235	6.0						3.0
21	240	5.8						2.9
22	240	5.5						2.8
23	250	4.8						2.9

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 20

Watheroo, W. Australia (30.3°S, 115.9°E) June 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	270	3.8					3.0	2.7
01	275	4.0					3.0	2.8
02	262	4.0					3.0	2.8
03	268	4.0					2.9	2.8
04	250	4.2					2.8	2.8
05	235	3.9					3.0	2.9
06	228	3.5					3.0	3.0
07	240	5.4				1.9	3.0	3.2
08	230	8.4				2.4	3.2	3.3
09	235	10.4				3.0	3.2	3.2
10	240	10.8	235	4.6		3.3	3.6	3.2
11	240	10.8	232	4.7		3.3	3.8	3.0
12	262	10.9	230	4.8		3.3	3.9	3.0
13	255	10.8	230	4.8		3.3	4.0	3.0
14	248	11.0	228	4.6		3.3	3.8	3.0
15	250	11.1	232	4.7		3.2	3.3	2.9
16	240	10.6				2.7	3.2	2.9
17	225	10.5				1.9	3.2	3.0
18	212	8.9					3.2	3.0
19	220	7.0					3.1	3.1
20	225	5.4					3.0	3.1
21	240	4.3					3.0	3.0
22	245	4.0					3.0	2.9
23	260	3.8					3.0	2.8

Time: 120.0°E.
Sweep: 16.0 Mc to 0.5 Mc in 15 minutes, automatic operation.

Table 21

Canberra, Australia (35.3°S, 149.0°E) June 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	260	4.7					2.6	2.6
01	275	4.7					2.7	2.7
02	278	4.6					2.5	2.7
03	280	4.6					2.5	2.7
04	260	4.9					3.3	2.8
05	240	4.7					2.8	2.9
06	235	4.1					2.7	2.9
07	240	5.6				1.7	2.6	3.0
08	220	8.5			100	2.5	3.5	3.2
09	230	10.5			100	3.0	3.5	3.2
10	225	11.4			100	3.3	3.5	3.2
11	222	11.6			100	3.5	3.6	3.1
12	220	11.6			100	3.5	4.9	3.1
13	230	11.3	200	4.5	100	3.5	4.7	3.0
14	230	11.4		4.0	100	3.4	4.4	3.0
15	230	11.0			100	3.0	4.4	3.0
16	230	11.0			100	2.5	3.9	3.0
17	220	10.2				1.7	3.5	3.0
18	215	8.6					3.5	3.0
19	220	7.4					3.4	3.0
20	225	6.0					2.8	3.0
21	240	5.4					2.9	2.9
22	250	4.8					2.6	2.8
23	250	4.6					2.6	2.7

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 22

Christchurch, New Zealand (43.5°S, 172.7°E) June 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	280	4.4					2.7	2.7
01	300	4.2					2.8	2.6
02	300	4.3					2.5	2.7
03	280	4.4					2.6	2.8
04	280	4.3					2.6	2.9
05	260	4.1					2.7	3.0
06	240	3.6					2.7	3.0
07	250	4.2				(1.2)	2.8	3.0
08	230	7.6				1.8	2.7	3.2
09	230	10.0				2.5		3.2
10	230	11.2				2.8	3.3	3.1
11	230	11.6	230	4.4		3.1		3.0
12	240	11.5	230	4.4		3.2	3.9	3.0
13	250	11.8				3.1	4.0	3.0
14	240	11.6				2.9	4.0	3.0
15	240	10.9				2.5	3.1	3.0
16	230	10.2				1.7	3.2	2.9
17	230	9.1				1.2	2.9	3.0
18	240	8.0					2.9	2.9
19	250	6.6					2.6	3.0
20	250	6.0					2.5	2.9
21	250	5.2					2.6	2.8
22	270	4.8					2.5	2.7
23	280	4.6					2.7	2.8

Time: 172.5°E.
Sweep: 1.0 Mc to 13.0 Mc.

Table 23*

Fraserburgh, Scotland (57.6°N, 2.1°W) May 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	340	(6.5)						2.4
01	350	(6.0)						2.3
02	350	5.4		4.7#				2.3
03	340	(5.4)						2.5
04	320	5.4	320#	3.2#				2.5
05	320	5.6	280	3.8	140	2.3		2.5
06	330	6.0	250	4.4	110	2.8	3.6	2.6
07	380	6.3	230	4.8	110	3.2	4.0	2.6
08		6.7	230	5.1	110	3.4	4.1	2.5
09		6.8	220	5.3	110	3.6	4.2	2.4
10		6.8		5.5	100	3.8	4.8	2.5
11	420	7.0	230	5.6	110	3.9	4.4	2.5
12	460	7.1	220	5.7	110	3.9	4.1	2.4
13	460	7.0	220	5.6	100	3.9	4.0	2.4
14	440	7.1	220	5.6	100	3.9	4.3	2.4
15	390	7.1	220	5.5	100	3.2	4.2	2.4
16	370	7.2	230	5.3	100	3.5	4.2	2.5
17	310	7.3	240	4.9	110	3.2	4.0	2.5
18	250	7.4			110	2.8	3.9	2.6
19	260	(7.3)			140	2.5		2.6
20	280	(7.2)			120#	2.8#		2.6
21	280	(7.4)						2.6
22	310	(7.3)						2.4
23	330	(7.0)						2.4

Time: Local.
Sweep: 2.2 Mc to 16.0 Mc in 1 minute.
*Average values except for f°F2 and fEs, which are median values.
#One or two observations only.

Table 24*

Slough, England (51.5°N, 0.6°W) May 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	317	6.9					3.2	2.3
01	316	6.6					2.6	2.3
02	318	6.3					2.6	2.3
03	324	6.0					2.6	2.4
04	327	5.8	316	3.3	121	1.6	3.4	2.5
05	328	6.2	270	3.9	116	2.1	4.6	2.5
06	366	6.4	248	4.5	113	2.8	4.8	2.6
07	394	6.7	233	5.0	111	3.2	5.8	2.6
08	424	7.1	234	5.5	109	3.5	5.1	2.5
09	438	7.7	233	5.6	110	3.7	6.9	2.5
10	434	8.2	236	5.8	109	3.9	7.0	2.5
11	423	8.0	232	5.9	108	4.0	7.2	2.5
12	422	8.1	238	6.0	109	4.0	6.8	2.5
13	426	8.2	234	5.9	109	4.0	6.0	2.5
14	401	8.1	237	5.9	109	3.8	5.3	2.5
15	390	8.1	233	5.8	109	3.7	5.4	2.5
16	370	8.2	239	5.6	110	3.5	4.9	2.5
17	319	8.2	243	5.1	111	3.2		2.6
18	283	8.1	259	4.6	115	2.7		2.6
19	271	8.0			127	2.1	3.5	2.6
20	272	7.8				1.7	3.9	2.6
21	284	8.0					2.8	2.5
22	296	7.7					2.6	2.4
23	304	7.4					1.9	2.4

Time: Local.
Sweep: 0.5 Mc to 16.5 Mc in 5 minutes.
*Average values except for f°F2 and fEs, which are median values.

Table 25

Lanchow, China (36.1°N, 103.8°E) May 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	420	9.8					5.1	2.2
01	400	9.6					4.4	2.2
02	400	9.0					4.2	2.2
03	400	7.8					4.2	2.2
04	420	7.4					3.5	2.2
05	400	7.6					3.9	2.2
06	360	9.2					3.8	2.3
07	360	10.1	330		150	3.4	4.4	2.3
08	400	11.0	320		150	3.7	5.4	2.3
09	440	11.5	320		155	4.1	5.6	2.2
10	480	12.2	340	7.0			5.4	2.2
11	480	12.5	320	6.6			5.0	2.2
12	480	13.0	320	7.0			5.3	2.2
13	480	13.0	350	7.0			6.0	2.2
14	510	13.0	350	6.8			5.2	2.2
15	480	12.5	340	8.4			4.9	2.2
16	440	12.2	330	6.5	150	4.0	5.0	2.2
17	440	12.0	320	6.1	155	3.8	5.0	2.2
18	400	12.0	340		155	3.0	5.0	2.3
19	360	11.5					4.5	2.3
20	(365)	(10.6)					(3.2)	(2.2)
21	405	10.0					4.6	2.1
22	420	9.8					4.6	2.2
23	440	9.8					5.6	2.1

Time: 105.0°E.
Sweep: 2.4 Mc to 16.0 Mc in 15 minutes, manual operation.

Table 26

Nanking, China (32.1°N, 119.0°E) May 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02								
03								
04	280	8.2					3.1	2.5
05	280	7.8					2.7	2.6
06	250	9.2			160	2.7	3.7	2.8
07	260	10.0	260		140	3.4	4.4	2.7
08	300	10.5	240	6.0	120	3.8	5.8	2.7
09	320	11.2	245				8.2	2.4
10	380	11.7	260	6.6			6.2	2.5
11	400	12.3	280	6.4			6.8	2.5
12	390	13.0	280	6.4			6.3	2.5
13	370	13.0	250	6.8			6.6	2.5
14	380	13.2	245	8.4			8.4	2.5
15	380	13.0	240	6.1			6.0	2.5
16	350	13.0	240	6.2	120	4.0	5.6	2.5
17	340	12.5	240				4.8	2.6
18	260	12.0					4.4	2.6
19	280	11.5					4.4	2.8
20	290	10.7					3.9	2.5
21	280	10.4					4.0	2.5
22								
23								

Time: 120.0°E.
Sweep: 1.7 Mc to 15.0 Mc in 15 minutes, manual operation.

Table 27

Delhi, India (28.6°N, 77.1°E) May 1948

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000 **
00	480	10.6						2.4
01	470	10.3						
02	(480)	10.2						
03								
04	480	8.4						2.4
05	440	8.8						
06	400	9.8						
07	400	10.6						
08	440	11.3						2.4
09	480	11.8						
10	520	12.1						
11	520	13.4						
12	520	13.4						2.1
13	540	(13.5)						
14	530	(13.8)						
15	520	(13.5)						
16	520	13.0						2.2
17	510	12.8						
18								
19								
20	490	11.4						2.3
21	520	11.0						
22	520	10.5						
23	520	10.5						

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 f°F2.
**Average values; other columns, median values.

Table 28

Bombay, India (19.0°N, 73.0°E) May 1948

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000 **
00								2.5
01								
02								
03								
04								2.6
05								
06								
07	330	11.0						
08	390	11.3						2.7
09	480	12.2						
10	510	13.0						
11	540	13.8						
12	555	14.0						
13	(570)							
14								
15	(570)	14.3						
16	540	14.5						2.3
17	510	14.5						
18	480	14.6						
19	540	14.2						
20	540	13.9						2.4
21	510	13.5						
22	480	13.4						
23	(480)	(13.2)						

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 f°F2.
**Average values; other columns, median values.

Table 29

Madras, India (13.0°N, 80.2°E) May 1948

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000 **
00								
01								
02								
03								
04								
05								
06	420	(10.0)						
07	420	11.0						
08	540	12.2						3.4
09	600	12.8						
10	600	12.6						
11	600	12.0						
12	630	11.8						2.1
13	660	12.2						
14	660	12.4						
15	660	12.7						
16	660	12.8						2.1
17	630	12.9						
18	600	12.9						
19	600	(12.3)						
20	(540)	(11.5)						
21		(11.0)						
22		(11.1)						
23								

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 f°F2.
**Average values; other columns, median values.

Table 30

Rarotonga I. (21.3°S, 159.8°W) May 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00								
01								
02								
03								
04								
05								
06								
07								
08								
09	240	14.3			110	3.3	3.8	3.0
10	250	14.2			110	3.6	5.2	3.0
11	250	14.0	250	7.5	110	3.8	4.6	2.8
12	250	14.2	235	(6.9)	110	3.9	4.2	2.7
13	305	14.0	250	7.2	105	3.8	5.1	2.7
14	320	14.2	250	7.0	110	3.7	4.4	2.6
15	340	14.0	250	6.6	110	3.5	5.2	2.6
16								
17								
18								
19								
20								
21								
22								
23								

Time: 157.5°W.
Sweep: 2.0 Mc to 16.0 Mc, manual operation.

Table 31

Brisbane, Australia (27.5°S, 153.0°E) May 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	250	6.5					2.0	2.8
01	250	8.4					2.4	2.8
02	260	6.0					2.0	2.8
03	260	5.6					2.8	2.8
04	250	5.5					2.0	2.8
05	250	5.2						2.8
06	240	5.9						3.0
07	230	9.4			130	2.4		3.2
08	230	12.0			108	3.1	2.6	3.2
09	235	13.0	220		100	3.5		3.2
10	240	13.0	220		100	3.6		3.1
11	240	12.8	220		100	3.8		2.9
12	240	12.3	220	6.5	100	3.8		2.9
13	270	12.4	220	6.6	110	3.8	3.1	2.9
14	250	12.4	230		100	3.8		2.8
15	250	12.2	230		110	3.4	2.6	2.8
16	240	11.9			110	2.8	2.7	2.9
17	240	11.2			130	2.1	3.0	2.9
18	230	10.0					2.1	2.9
19	240	8.7					2.0	2.9
20	250	8.3					1.6	2.9
21	240	7.5					2.0	2.9
22	245	7.0					2.8	2.8
23	250	6.5						2.8

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 32

Canberra, Australia (35.3°S, 149.0°E) May 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	260	6.0					2.9	2.7
01	270	5.9					2.9	2.7
02	272	5.7					2.5	2.7
03	272	5.5					2.5	2.7
04	250	5.5					2.4	2.8
05	240	4.9						2.7
06	240	4.7						2.9
07	240	7.2			110	2.0		3.0
08	230	10.9			100	2.6		3.2
09	230	12.2			100	3.1		3.1
10	230	13.0			100	3.5		3.0
11	225	13.1			100	3.6		3.0
12	220	12.8			100	3.6		2.9
13	230	13.0			100	3.6		2.8
14	230	12.9			100	3.5		2.8
15	240	12.3			100	3.2		2.9
16	240	12.0			100	2.6	3.4	2.9
17	228	11.4			125	2.0	3.0	2.8
18	220	10.2					3.1	2.8
19	240	8.6					2.8	2.8
20	240	8.0					2.8	2.8
21	240	7.0					2.7	2.7
22	250	6.8						2.7
23	260	6.4					2.8	2.6

Time: 150.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 33

Hobart, Tasmania (42.8°S, 147.4°E) May 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	265	6.0					2.4	2.7
01	275	5.5					2.5	2.7
02	270	5.6					2.5	2.7
03	260	5.1					3.0	2.7
04	262	5.1					2.7	2.8
05	252	4.8					3.5	2.8
06	250	4.6					2.4	2.8
07	245	5.5					2.7	3.0
08	230	9.0			105	2.4	2.7	3.5
09	230	(10.5)			100	3.0	3.0	3.6
10	220	10.8			105	3.2	3.4	3.6
11	225	11.0	225		100	3.5	3.4	3.6
12	235	(11.0)	210		100	3.5	3.5	(3.6)
13	235	(11.0)	218		100	3.5	3.9	(3.5)
14	225	(11.0)			102	3.3	3.9	3.5
15	228	10.5			100	3.0	3.6	3.4
16	225	10.5			105	2.5	3.1	(3.5)
17	220	(10.5)					2.8	(3.4)
18	215	9.5					2.5	3.2
19	220	8.6					2.2	3.2
20	240	7.5						3.1
21	248	6.8						2.8
22	250	6.4					2.4	2.7
23	258	5.8					2.5	2.7

Time: 150.0°E.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 34*

Fraserburgh, Scotland (57.6°N, 2.1°W) April 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	340	(5.5)						2.4
01	350	(4.8)						2.4
02	365	4.4						2.4
03	355	4.6						2.2
04	325	4.4						2.4
05	295	5.0			100#	(2.3)#		2.3
06	265	5.9			115	2.4		2.7
07	270	6.7	260#	4.6#	115	2.9		2.7
08	275	7.2	235	5.2	115	3.2	3.8	2.7
09	260	7.8	225	5.4	110	3.4	4.0	2.6
10	275	8.6	210	5.6	110	3.6	4.2	2.7
11	285	8.8	210	5.5	110	3.7	4.2	2.7
12	270	8.8	225	5.7	110	3.4	4.3	2.6
13	280	8.9	220	5.6	110	3.7	4.0	2.6
14	265	9.3	225	5.7	110	3.7	4.1	2.6
15	240	9.2	230#	5.3#	110	3.5	4.0	2.6
16	235	8.6	225	(3.8)#	110	3.2	3.9	2.6
17	240	9.0			115	2.9		2.7
18	250	9.0			115	2.5		2.7
19	260	(8.6)			135#	2.2		2.7
20	265	(8.2)						2.6
21	280	(8.0)						2.5
22	300	(7.3)						2.6
23	320	(6.5)						2.4

Time: Local.
Sweep: 2.2 Mc to 16.0 Mc in 1 minute.
*Average values except for f°F2 and fEs, which are median values.
#One or two values only.

Table 35*

Slough, England (51.5°N, 0.6°W) April 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	299	7.1					1.7	2.4
01	303	6.7					2.5	2.4
02	305	6.2					2.6	2.4
03	306	5.7					2.5	2.4
04	298	5.3					2.6	2.4
05	288	5.5	290	3.1#	135	1.6	3.7	2.5
06	278	6.4	250	4.3	121	2.3	4.3	2.7
07	287	7.2	239	4.7	113	2.9	4.8	2.7
08		8.2	228	5.1	111	3.3	4.6	2.7
09	309	8.7	231	5.3	111	3.6	4.8	2.6
10	323	9.3	231	5.8	110	3.7	4.8	2.6
11	331	10.0	222	5.8	110	3.8		2.6
12	331	10.3	229	6.0	110	3.9	4.8	2.6
13	332	10.3	229	6.0	109	3.9	4.0	2.6
14	330	10.0	230	6.0	109	3.8	4.6	2.6
15	311	9.7	231	5.5	110	3.6	3.9	2.6
16	295	9.5	232	5.3	111	3.3	3.5	2.6
17	260	9.2	240	4.7	113	2.9		2.7
18	255	9.1			120	2.3		2.7
19	254	9.2			139	1.7	1.9	2.7
20	252	8.7					1.8	2.6
21	261	8.2						2.5
22	279	7.8						2.5
23	290	7.5					2.5	2.4

Time: Local.
Sweep: 0.5 Mc to 16.5 Mc in 5 minutes.
*Average values except for f°F2 and fEs, which are median values.
#One or two values only.

Table 36

Delhi, India (28.6°N, 77.1°E) April 1948

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	** F2-M3000
00	420	11.1						2.6
01	450	10.3						
02	(390)	(8.3)						
03	420	8.7						
04	390	8.2						2.6
05	390	8.1						
06	360	9.6						
07	360	11.0						
08	390	11.6						2.8
09	420	12.4						
10	450	13.1						
11	450	(13.5)						
12	450	(13.9)						
13	450	(13.7)						
14	450	(13.6)						
15	465	(13.6)						
16	420	(13.6)						
17	450	(13.2)						
18								
19								
20	420	(12.2)						2.5
21	420	(11.7)						
22	420	11.5						
23	420	11.5						

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 f°F2.
**Average values; other columns, median values.

Table 37

Bombay, India (19.0°N, 73.0°E) April 1948

Time	*	f^oF2	h'F1	f^oF1	h'E	f^oE	fEs	F2-M3000**
00								
01								
02								
03								
04								
05								
06								
07	330	10.7						
08	390	12.1						2.6
09	435	13.2						
10	495	14.0						
11	(480)	(14.4)						
12		(14.6)						2.3
13		(14.7)						
14		(14.8)						
15		(14.9)						
16		(15.1)						2.2
17	(480)	(14.9)						
18	(480)	(14.7)						
19	510	(14.7)						
20	510	(14.5)						2.3
21		(14.7)						
22								
23								

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 f^oF2.
**Average values; other columns, median values.

Table 38

Madras, India (13.0°N, 80.2°E) April 1948

Time	*	f^oF2	h'F1	f^oF1	h'E	f^oE	fEs	F2-M3000**
00								
01								
02								
03								
04								
05								
06								
07	420	10.2						
08	480	12.6						2.5
09	540	13.1						
10	540	13.0						
11	600	12.7						
12	600	12.6						3.1
13	600	12.6						
14	600	12.6						
15	600	13.2						
16	600	13.9						2.1
17	600	13.4						
18	600	13.2						
19	540	11.9						
20		(10.5)						
21		(10.2)						
22		(10.0)						
23								

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 f^oF2.
**Average values; other columns, median values.

Table 39*

Falkland Is. (51.7°S, 57.8°W) April 1948

Time	h'F2	f^oF2	h'F1	f^oF1	h'E	f^oE	fEs	F2-M3000
00	372	5.6						2.4
01	370	5.5						2.4
02	374	5.4						2.4
03	366	5.2						2.4
04	354	5.2						2.4
05	341	5.0						2.4
06	302	5.5						2.5
07	245	(8.3)				2.5		3.0
08	234	11.0			117	2.7		3.2
09	238	(13.6)			119	2.9		3.2
10	237	(14.4)			113#	3.1		3.1
11	240	14.5			115#	3.3#		3.1
12	241	(14.1)			117	3.3		3.0
13	242	13.1			123#	3.1#		3.0
14	247	12.4			124	3.1		3.0
15	249	11.8			125#	2.9		3.1
16	245	11.1				2.4#		3.2
17	243	9.8						3.1
18	246	8.2						3.1
19	248	6.6						3.2
20	263	5.6						2.8
21	296	5.4						2.7
22	332	5.3						2.6
23	358	5.5						2.4

Time: Local.
Sweep: 2.2 Mc to 16.0 Mc in 1 minute.
*Average values except for f^oF2 which are median values.
#One or two values only.

Table 40

Delhi, India (28.6°N, 77.1°E) March 1948

Time	*	f^oF2	h'F1	f^oF1	h'E	f^oE	fEs	F2-M3000**
00	390	7.2						2.6
01	360	7.0						
02	400	6.6						
03	(360)	(5.8)						
04	390	5.2						2.7
05	390	5.0						
06	330	5.7						
07	300	8.7						
08	330	10.6						2.0
09	330	11.4						
10	360	12.4						
11	360	13.0						
12	390	13.8						2.7
13	390	(14.2)						
14	390	(14.2)						
15	420	(14.0)						
16	390	(14.0)						2.5
17	390	(14.0)						
18								
19								
20	390	11.6						2.7
21	390	10.6						
22	390	8.8						
23	390	7.8						

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 f^oF2.
**Average values; other columns, median values.

Table 41

Bombay, India (19.0°N, 73.0°E) March 1948

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	** F2-M3000
00								2.7
01								
02								
03								
04								2.9
05								
06	(330)	(6.4)						
07	330	9.2						
08	330	11.3						3.0
09	390	12.6						
10	420	14.2						
11	(450)	(14.7)						
12		(14.7)						
13		(14.9)						
14		(14.8)						
15	(480)	(14.9)						
16	(450)	(14.9)						2.5
17	(450)	(15.1)						
18	480	(15.0)						
19	(480)	(15.1)						
20		(15.1)						2.7
21		(14.8)						
22		(14.2)						
23		(12.2)						

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 f°F2.
**Average values; other columns, median values.

Table 42

Madras, India (13.0°N, 80.2°E) March 1948

Time	*	f°F2	h'F1	f°F1	h'E	f°E	fEs	** F2-M3000
00								
01								
02								
03								
04								
05								
06								
07	420	9.1						
08	480	11.0						2.5
09	540	12.0						
10	540	13.0						
11	540	13.1						
12	600	12.6						2.2
13	600	12.8						
14	600	13.4						
15	600	13.5						
16	600	13.9						2.1
17	600	13.8						
18	600	13.8						
19	600	13.2						
20	(570)	(11.2)						2.6
21		(11.0)						
22		(10.5)						
23								

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 f°F2.
**Average values; other columns, median values.

Table 43*

Falkland Is. (51.7°S, 57.8°W) March 1948

Time	h'F2	f°F2	h'F1	f°F1	h'E	f°E	fEs	F2-M3000
00	336	6.9						2.5
01	343	6.6						2.5
02	341	6.4						2.5
03	331	6.2						2.5
04	330	6.0						2.5
05	322	5.6						2.5
06	255	7.1				2.3#		3.0
07	245	8.3			128	2.5		3.1
08	245	9.8			117	2.9	3.4	3.1
09	258	11.4	255#	5.1#	112	3.1	4.2	3.0
10	255	11.9	233#	5.5#	110	3.3	4.2	3.0
11	245	12.4			110	3.2	4.4	3.0
12	256	12.6	245#	5.2#	111	3.3	4.6	3.0
13	257	12.5	243#	5.7#	111	3.2	4.0	3.0
14	247	11.8			114	3.2	3.7	3.0
15	249	10.9			115	3.1	3.6	3.1
16	250	10.4			117	2.9	3.2	3.1
17	251	10.0			132	2.5	3.6	3.2
18	247	9.6					3.7	3.2
19	247	8.2					3.7	3.1
20	258	7.2					3.6	3.0
21	287	6.5					3.8	2.7
22	308	6.6						2.6
23	328	6.7						2.5

Time: Local.
Sweep: 2.2 Mc to 16.0 Mc in 1 minute.
*Average values except f°F2 and fEs, which are median values.
#One or two values only.

TABLE 44

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

Form adopted June 1946

IONOSPHERIC DATA

h'F2 (Characteristic), km (Unit), August (Month), 1948

Observed at Washington, D.C.

Lat. 39.0° N, Long 77.5° W

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by: E. J.W., J.J.S., J.M.C.

Calculated by: M.C.E., G.G.H.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	200K	300K	280K	(260)AK	320K	300K	(250)AK	GK	550K	650K	650K	700K	GK	570K	520K	GK	450K	420K	350K	250K	250K	250K	250K	270K
2	250K	250K	280K	290K	270K	280K	250K	220K	480K	510K	560K	GK	GK	610K	540K	460K	400K	400K	280K	250	240	250	280	260
3	(300)A	260	280	290	280	260	(230)A	280	260	330	360	420	500	530	500	430	400	410	300	260	240	(320)A	260	310
4	280	270	250	240	250	250	230	210	230	330	330	360	420	450	470	400	360	350	270	250	240	(250)A	280	270
5	280	270	250	240	230	260	240	220	300	350	390	420	450	500	G	400	370	360	300	250	(270)A	(240)A	250	260
6	270	240	260	250	250	250	(240)A	280	280	330	350	350	380	370	330	340	360	280	(230)A	(260)A	(250)A	230	240	(250)A
7	280	300	290	300	280	270	380K	500K	480K	GK	590K	630K	AK	630K	480K	510K	450K	400K	330K	(270)AK	270K	290K	280K	270K
8	260K	400K	370K	NCK	(430)SK	NCK	280K	GK	GK	GK	GK	GK	GK	GK	GK	GK	GK	520K	GFK	300K	280K	BK	BK	360K
9	380K	360K	320K	300FK	310K	300K	280K	GK	GK	GK	GK	GK	GK	GCK	600K	480K	470FK	380FK	300K	250K	210K	230K	280K	270K
10	250K	280K	AK	(310)AK	310FK	320K	(250)AK	GK	GK	GK	CK	CK	GK	GK	480K	GK	430K	420K	350K	250K	270K	250K	(270)AK	(250)AK
11	250K	(310)FK	(380)FK	(400)JF	FK	(300)FK	210HF	GK	450K	400K	330K	GK	370	(370)C	330	320	300	300	250	210	230	240	(270)A	(270)A
12	250	(300)A	280K	(300)AK	(300)FK	(300)FK	380K	430K	GK	GK	GK	GK	(610)CK	CK	BK	480K	440K	330K	380K	270K	250K	250K	220FK	240K
13	310K	300FK	AK	(280)AK	290K	AK	230K	330FK	430FK	360K	530K	GK	GK	GK	430K	CK	370K	340K	280	250	(230)A	(250)A	A	A
14	A	A	A	260	250	250	220	210	300	470	470	NS	500	470	500	450	370	340	280	230	230	240	250	250
15	260	250	270	A	260	250	230	280	250	320	280	330	370	C	360	360	330	300	250	230	230	220	200	(250)A
16	260	260	250	(250)A	240	250	(250)A	310	310	300H	340	450	430	400	360	380	350	310	240H	240	230	240	250	250
17	(250)A	(280)A	260	250	260	250	(230)A	(230)A	320	340	340	410	(440)C	360	400	390	330F	330	(240)A	250	230	(250)A	240	260
18	260	250	250	250	250	300	230	220	300	C	C	460	460	470	450	440	420	360	280	250	270	A	C	260
19	270	270	260	260	260	260	240	270	280	270	270	350	350	360	350	350	350	300	240H	260	260	280	300	270
20	280	280	280	270	250	240	240	230	230	350	320	450	390	(400)C	420	(400)C	400	(340)C	250	250	240	280	240	280
21	330	300	280	290	270	270	240	240	350	330	560	400	390	370	390	400	350	350	300	260	250	220	230	260
22	250	300	300	270	270	270	240	C	C	330	370	350	370	400	370	350	330	250	260	240	250	240	250	270
23	300	250	270	260	260	270	270	310	300	440	C	380	380	370	350	350	340	300	230H	250	(230)A	230	260	270
24	270	270	260	250	270	280	250	230	310	300	430	470	C	430	380	390	360	310	240	240	250	250	250	270
25	270	250	230	240	250	250	240	250	300	280	(300)C	310	350	300	320	320	300	280	230	230	(230)A	220	230	250
26	280	260	260	250	240	250	290	C	C	C	C	320	320	340	C	330	270	(270)A	(240)A	230	A	(280)A	(260)A	A
27	A	A	(310)A	280	(270)A	(230)A	230F	250	300H	C	290H	A	C	(350)C	310	330	260	220	(240)A	230	220	250	(240)A	250
28	250	270	270	260	270	270	250	220	260	240	(300)C	300	340	340	320	300	270H	280	230F	230	220	230	240K	240K
29	260K	260K	250K	(260)AK	220K	250K	260K	270K	330K	450FK	450FK	500K	590K	570K	450FK	400K	380K	AK	(260)AK	220K	250K	270K	260K	260K
30	310K	280K	300K	300K	(340)AK	(300)AK	260K	230K	300K	430K	430K	560K	490K	500K	490K	(470)SK	430K	340K	240K	240K	230K	230K	(250)AK	(300)AK
31	280K	280K	(260)AK	270K	300K	270FK	270K	350K	380K	420K	460FK	620K	410K	380K	400FK	400K	350	300	230F	250	250	260F	270	290
Median	270	270	270	260	270	270	240	270	310	355	390	450	435	430	420	400	360	335	260	250	240	250	250	260
Count	29	29	28	29	30	29	31	29	29	28	27	28	28	29	29	30	31	30	31	31	30	29	28	29

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 45

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

f°F2 (Characteristic), Mc (Unit), August (Month), 1948

Observed at Washington, D. C. Lat 39.0°N, Long 77.5° W

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W., J.J.S., J.M.C.

Calculated by: M.C.E., G.G.H.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F K	K(4.2)JF	K(3.9)JF	3.7FK	3.1FK	3.1FK	4.1K	G K	5.0K	4.9K	5.2K	5.2K	G K	5.5K	5.7K	G K	5.8K	K(5.9)JS	6.4K	6.3K	6.7K	7.1K	6.3K	(6.2)JK
2	6.0JK	5.3K	5.1K	4.9K	4.5K	4.3K	4.7K	4.9K	5.4K	5.5K	5.5K	G K	G K	5.5K	5.7K	5.9K	5.7K	5.9K	6.0K	6.1J	5.7	5.9	5.5	5.5
3	5.2	4.9	4.6	4.4	4.0	4.1	5.5	6.9	7.2	7.5	7.3	6.5	(5.9)J	6.0	5.9	6.4	6.3	6.4	6.6	7.0	7.0	6.7	(6.2)J	(5.9)J
4	6.1	5.5F	5.6F	4.9F	4.7F	4.5	(5.9)S	7.0	(6.6)F	7.2	8.9	7.3	6.7	6.7	6.6	6.9	7.0	7.1	7.4	7.0	6.8	(6.4)JF	(5.7)JF	(5.7)JF
5	(5.7)JF	5.5F	5.3F	(5.0)JF	4.3	4.2	6.5	7.4	7.8	7.6	7.5	6.9	6.3	(6.1)J	G	6.5	6.4	6.5	6.7	7.1	6.9	(6.4)J	(6.0)JS	5.6
6	5.5F	5.4F	5.1F	4.9F	4.3F	4.1F	5.7	7.0	7.4	7.3	8.0	(8.1)J	7.9	8.3	8.2	7.9	7.8	7.5	7.5	8.0	(8.1)J	(7.7)JS	(6.9)J	(6.4)J
7	5.8	5.6	5.7	5.5	5.1F	4.3F	4.5K	4.6K	5.1K	G K	5.3K	5.3K	[5.4]AK	5.5K	5.7K	5.7K	5.9K	5.9K	6.3K	(6.5)JK	(6.7)JK	6.8K	7.3K	6.9K
8	5.9FK	F K	F K	N CK	2.9FK	K[3.1]NC	3.3FK	G K	G K	G K	G K	G K	G K	G K	G K	G K	G K	5.3FK	G FK	(3.6)FK	2.3FK	(2.3)FK	2.3FK	2.9FK
9	(2.7)FK	(2.7)FK	2.8FK	2.3FK	2.0FK	2.3FK	3.7FK	G K	G K	G K	G K	G K	G K	G CK	5.3K	5.6K	5.7FK	6.2K	7.2K	7.9K	(7.5)SK	7.4K	6.7K	(6.9)FK
10	(6.5)JK	F K	F K	(2.8)FK	3.1FK	3.1FK	3.8FK	G K	G K	G K	C K	C K	G K	G K	5.7K	G K	5.6K	5.6FK	5.8K	5.5FK	5.3FK	K(5.8)FS	(5.3)FK	K(4.7)JF
11	(3.6)FK	(2.3)FK	(1.9)FK	K(1.7)JF	F K	(2.5)FK	3.9FK	G K	5.3K	5.8K	(6.3)CK	G K	6.8	7.3	7.4	7.3	7.7	7.3	8.3	7.3	7.1	(6.9)S	(6.1)J	(5.6)JF
12	5.5F	4.9F	K(4.2)FV	2.8FK	(1.7)F	2.2FK	(4.5)FK	4.9FK	G K	G K	G K	G K	(5.4)K	5.4K	[5.5]BK	5.6K	5.7K	5.6K	5.6K	5.7K	K(6.3)JF	K(5.9)JF	(5.0)FK	VK(5.0)JF
13	3.9FK	3.8FK	(3.7)AK	3.1FK	2.9FK	(2.7)FK	(4.7)FK	5.2FK	5.5FK	5.7K	5.5K	G CK	G CK	G K	6.1K	[6.2]CK	(6.3)JK	(6.4)JK	6.9F	6.7F	6.8F	6.4J	5.9F	5.5
14	5.3F	5.5F	4.8F	4.5F	4.3F	4.2F	5.4	5.6F	(5.8)C	(5.6)C	5.9	[5.9]NC	(5.9)C	5.8	[6.0]C	6.3	(6.5)J	(6.3)J	7.0	[6.8]K	(6.7)J	(6.2)	5.6	5.7
15	(4.9)J	4.7F	4.5F	4.5F	4.1F	4.1F	5.0	6.0	(6.7)J	(6.7)F	(6.7)J	7.2	7.5	7.3	7.5	7.7	8.0	8.3	8.3	8.0	7.8	7.3	(6.5)J	5.7
16	5.5	5.5	5.4F	5.2	4.9F	(4.5)S	5.6	(6.7)F	7.1	6.9	(6.7)JS	6.7	6.9	7.1	7.4	7.3	7.5	7.4	7.4	7.6	7.5	7.2	(6.5)J	6.2
17	5.8	5.6	5.5F	4.9	4.7F	4.5F	5.8F	6.2F	6.7F	7.0	7.8	7.5	7.5	7.6	7.6	7.6	7.7	7.5	7.5	7.7	7.6	6.8	6.3	5.8F
18	5.7F	5.7F	5.4F	4.7F	4.0F	3.8F	5.7F	6.3	7.0F	C	C	(6.5)J	6.6	6.8	6.9	7.0	6.8	6.8	7.0	6.8	6.8	7.0	[6.6]C	6.3
19	6.0	(5.8)J	5.7	5.4	5.1	4.9F	6.1	7.2	8.8	(9.6)P	(9.1)P	8.8	8.8	8.6	8.7	8.7	8.7	8.5	8.6	8.5	8.2	(8.1)JF	7.8	(7.6)J
20	7.3	7.1	6.9	6.8	6.7	(6.2)J	5.8	6.8	7.3	8.0	(7.7)JC	7.8	8.0	7.6	7.4	7.3	7.3	7.6	7.4	7.6	7.2	6.6	6.0	5.8
21	5.4	(5.4)C	4.8	4.8	(4.7)J	3.9	4.8	5.6	6.3	6.7	(5.8)J	7.6	7.9	7.8	7.7	7.5	7.3	7.5	7.4	7.8	7.9	7.0	5.7	5.3
22	4.6F	4.3F	4.5	4.2	4.1	3.7	5.3	C	C	6.8	7.0	7.3	7.9	8.2	8.5	8.6	8.6	8.6	8.7	8.6	(8.8)C	8.0	7.0	(6.4)J
23	(6.2)J	(5.9)C	6.2	6.0	5.3	4.5	5.6	6.8	7.6	7.3	[7.4]C	7.5	7.5	8.1	8.1	7.8	7.8	7.9	7.8	7.8	7.5	(6.6)J	(6.5)J	(6.5)J
24	(6.1)J	5.7	5.7	4.9	4.7F	4.3	5.4F	6.3	6.7	(6.7)J	(6.5)J	6.6	(6.8)J	7.3	7.3	7.1	7.1	7.2	7.3F	7.0F	(6.8)JF	(6.6)J	(6.5)J	(5.7)JF
25	(5.9)JF	(6.0)JF	(5.9)JF	(4.9)F	4.5F	4.7F	6.0F	6.9	7.6	8.5	8.5	8.9	9.1	9.0	8.9	8.6	8.6	8.7	9.0	8.9	(8.4)J	7.2	(6.1)F	5.1F
26	5.4	5.3	4.9F	4.9F	4.5	4.1	(5.9)J	C	C	C	C	(8.5)JC	8.6	8.5	[8.4]C	8.4	8.5	8.9	(8.9)C	8.4	(7.7)P	7.1	(6.4)J	A
27	A	(5.4)A	5.1F	5.0F	5.0F	4.6F	5.7	6.6	(6.7)JH	(6.7)J	6.7	[7.3]A	7.9	8.0	8.5	8.0	8.1	7.9	8.0	7.7	7.4	7.3	6.7	(6.4)J
28	(6.1)J	5.8	5.8	5.3	5.1	5.0	5.5	(6.5)JS	7.8	7.7	7.9	8.1	8.6	8.7	9.4	9.3	8.9	9.0	8.9	8.8	8.8	7.5F	6.8K	6.6K
29	(6.3)JK	6.3K	6.5K	6.2K	5.2K	3.3FK	4.9FK	6.0K	(6.7)JK	(5.6)FK	5.7K	(5.4)FK	5.7K	5.5FK	5.9K	5.9K	K(5.9)JS	5.8K	6.4K	5.6K	5.3K	5.1K	4.6K	4.2K
30	3.3FK	3.9K	3.6K	3.5K	3.3FK	3.1K	4.5K	5.3K	5.9FK	5.5FK	5.6FK	5.4K	5.5FK	5.5FK	5.6K	K5.5FS	(5.8)SK	6.2K	6.8FK	6.7K	6.4K	5.7FK	5.0K	4.3K
31	4.0FK	3.9FK	3.8FK	(2.9)FK	(2.7)FK	(2.3)FK	4.1FK	5.2FK	5.5FK	5.7K	5.7NK	5.3FK	6.1FK	6.2K	6.0K	K6.0JF	6.3	6.3	6.2	(6.1)J	(6.1)JF	5.8F	5.6F	5.8
Median	5.7	5.4	5.1	4.9	4.4	4.1	5.4	6.0	6.7	6.7	6.6	6.6	6.7	6.8	6.9	7.0	7.0	7.1	7.3	7.1	7.0	6.8	6.2	5.7
Count	29	29	29	30	30	31	31	29	29	29	28	30	31	31	31	31	31	31	31	31	31	31	31	30

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1949 O - 703519

Form adopted June 1946

TABLE 46

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

f°F2 (Characteristic), Mc (Unit), August (Month), 1948

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W., J.J.S., J.M.C.

Calculated by: G.G.H., K.L.W.

Day	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
1	4.5FK	(4.1)FK	3.7FK	3.4FK	3.1FK	3.7K	4.3K	G K	4.9K	G K	G K	5.3K	G K	G K	(5.5)SK	[5.5]SK	5.9K	6.2K	6.5K	6.5K	6.9K	6.4K	6.3K	(6.1)JK
2	(5.9)JK	5.1K	4.9K	4.7K	4.5K	4.5K	4.8K	5.1K	5.3K	5.5K	5.3K	G K	G K	(5.5)SK	5.8K	5.8K	5.8K	6.2K	6.0K	5.8	5.9	5.7	5.5	5.4
3	5.0	4.8	4.5	4.1	4.2	4.8	(5.9)J	7.1	7.6	7.5	6.7	6.5	G	5.9	(6.0)J	6.1	6.3	6.6	6.7	7.1	6.5	[6.4]C	(6.1)JS	5.7
4	5.9	(5.5)JF	5.5F	4.9	4.4	6.0	6.4	(6.7)F	6.7	[7.6]C	8.1	(6.6)J	6.8	6.7	6.7	7.1	7.0	7.5	7.5	6.9	(6.7)J	(6.1)JF	(5.7)F	(5.5)F
5	(5.5)JF	5.6F	5.2F	4.7F	3.9	5.4	7.0	7.6	7.7	7.5	[6.9]C	6.5	(6.2)J	6.6	(6.2)J	6.5	6.3	6.7	6.9	7.1	6.7	(6.1)JS	5.7	5.6F
6	5.3F	5.1F	4.9F	4.7F	4.1	4.9	6.5	7.1	7.2	(7.8)J	8.4	8.1	8.3	8.3	8.3	7.7	7.7	7.5	7.7	8.1	(7.7)S	7.2	(6.7)J	(6.1)J
7	5.6	5.7	5.7	5.1	(5.2)J	4.1	4.5K	4.7K	5.0K	[5.4]AK	5.7K	5.5K	5.7K	5.5K	5.7K	5.8K	5.9K	5.9K	6.4K	(6.6)JK	6.9K	6.8K	(7.1)JK	6.8K
8	F K	2.9FK	N CK	N CK	N CK	N CK	3.4FK	3.7FK	G K	G K	G K	G K	G K	G K	G K	G K	4.5K	5.1FK	(4.6)FK	F K	F K	F K	2.1FK	F K
9	(2.6)FK	2.9FK	2.6FK	2.2FK	1.9FK	[3.0]CK	4.2K	G K	G K	G K	C K	G K	C K	G K	5.5K	5.7K	5.7K	6.3K	7.5K	(8.3)SK	(7.5)SK	K(6.8)JS	(6.7)FK	(6.9)JK
10	K(5.6)JF	F K	(2.9)FK	2.9FK	3.1FK	3.3FK	3.9FK	G K	C K	C K	C K	C K	G K	G K	(5.4)CK	5.4FK	5.5K	5.5FK	(5.7)PK	5.3FK	K(6.0)JS	(5.7)FK	(4.5)FK	(4.0)FK
11	(3.1)FK	(2.1)FK	(1.8)FK	F K	F K	(3.4)FK	4.5FK	G K	5.6K	[6.2]CK	6.7K	G K	(7.0)C	7.5	7.4	(7.5)JS	(7.3)S	8.1	7.9	7.4	6.9	6.3F	5.9F	5.8F
12	4.9F	4.5F	(3.3)FK	(2.1)FK	1.9FK	(3.3)FK	4.5FK	4.9K	5.0K	G K	G K	G K	(5.4)BK	K(5.5)SC	(5.5)CK	5.6K	5.9K	5.7K	5.6K	K(5.9)JF	(6.1)JK	(5.7)CK	5.2K	(4.5)FK
13	3.9FK	3.5FK	(3.5)AK	(3.1)FK	2.7FK	3.7K	4.9KJ	5.3FK	5.5K	5.5K	5.5K	5.7K	G K	G K	(6.0)PK	6.2K	[6.3]CK	(6.4)JK	6.9FK	(6.9)C	6.9	(6.7)J	(5.9)JS	5.7	5.5F
14	(5.5)F	(5.0)JF	4.6F	4.3F	4.1F	4.8	(5.8)F	(5.7)C	5.9	(6.3)J	S	B	C	5.8	(6.2)J	(6.6)J	(6.3)C	6.6	(6.9)JC	(6.7)J	(6.7)J	(5.9)SC	5.7	(5.1)JS
15	(4.9)JF	4.9F	(4.7)FV	(4.1)FV	(4.0)	4.5	(5.5)H	(6.4)J	(6.5)JH	7.0F	(7.2)PC	7.1	7.7	7.8	7.7	7.9	8.2	8.6	8.2	(7.8)S	7.6	6.9	6.0	5.6
16	5.4	(5.5)J	(5.3)F	5.0	4.5F	4.9	(5.9)J	(6.5)J	7.4	(6.5)J	(6.5)C	6.8	7.0	7.1	7.2	7.4	7.3	7.4	7.6	7.5	7.3	6.7	(6.5)JS	6.0
17	5.7F	5.5	5.3F	4.9F	4.4	4.8F	6.2F	6.6F	(6.7)JF	7.5	7.4	7.6	7.8	7.5	7.6	7.7	7.5	7.5	7.5	7.7	7.3F	(6.6)JF	6.0F	5.7F
18	(5.5)F	5.4F	5.1F	4.3F	3.8F	4.5F	6.0F	7.0	7.0	[6.7]C	(6.4)J	6.5	6.7	6.8	6.8	6.8	6.9	6.9	6.8	6.8	7.2	6.8	[6.8]C	6.9
19	6.0	5.9	5.6	5.3	5.0	5.0	6.6	8.0	(9.1)P	9.2	8.6	8.8	8.9	8.8	8.7	8.5	8.5	8.5	8.5	8.4	8.3	7.9	[7.8]C	(7.6)S
20	7.4	6.9	(6.6)J	6.7	6.5	(5.7)J	6.2	7.4	8.0	(7.5)C	(7.5)J	8.2	7.6	7.3	7.0	7.4	7.5	7.4	7.7	7.7	7.2	6.5	(5.8)J	5.5
21	5.2	5.1	5.0	4.8	4.2	4.2	5.2	5.9	6.6	6.2	7.4	7.5	(6.8)J	7.5	7.5	7.4	7.0	7.4	7.6	8.0	7.5	(6.4)JF	5.5	4.9
22	4.5F	4.2	4.1F	4.2	3.7	4.7	5.8	C	C	7.0	7.2	7.5	8.0	8.4	8.6	8.5	8.6	8.5	8.6	8.6	8.4	7.5	6.7	(5.8)C
23	6.5	(5.8)J	(6.0)C	5.4	4.9	4.9	(6.0)J	7.2	7.3	7.4	[7.6]C	(7.7)J	(7.8)J	8.0	7.8	7.7	7.8	8.2	7.7	(7.8)P	7.2	(6.4)J	(6.4)J	(6.3)J
24	(5.8)J	5.7	5.3	4.9	(4.4)J	4.5F	6.0	6.4	6.7	(6.5)J	6.8	6.9	7.0	7.4	7.1	7.2	7.0	7.3	7.2	(6.7)J	(6.8)JF	(6.6)JF	(5.9)JF	(5.7)JF
25	(5.9)JF	(5.8)F	(5.8)FS	(4.6)F	4.5F	5.3F	6.7F	7.3	8.1	8.7	(8.7)J	8.9	(9.3)P	8.8	8.8	8.6	8.5	8.9	8.9	(8.7)J	7.9	6.5F	(5.5)F	(5.0)F
26	5.4	5.2	4.9F	4.7	4.2	4.8	6.7	C	C	C	C	(8.2)J	(8.3)C	(8.3)C	[8.5]C	8.7	8.8	8.8	8.6	(8.0)J	(7.2)C	(6.9)J	A	A
27	[5.2]A	5.3	5.2F	5.1F	4.8	5.2	6.3	6.6	(6.4)J	7.1	7.3	7.7	7.9	8.3	8.3	8.0	7.9	8.2	8.0	7.7	7.2	7.1	6.5	6.3
28	(6.0)J	5.8	(5.7)J	5.3	4.9	4.9	6.3	7.0	7.8H	(8.1)JS	8.3	8.3	8.6	9.0	9.4	8.9	8.8	9.2	8.9	8.9	8.3F	6.9	6.7K	6.3K
29	6.5K	6.3K	6.3K	K(5.9)JF	4.9K	K(4.2)SC	5.6FK	6.8K	G K	C K	5.6K	[5.6]CK	5.7K	G K	6.0K	6.0K	5.8K	[6.0]AK	6.1K	5.6K	5.1K	5.0K	(4.5)SK	3.7FK
30	3.5FK	3.8FK	3.3FK	3.3FK	3.3FK	3.6K	5.1K	5.9K	(6.0)JK	5.5FK	5.5FK	5.7K	5.7FK	5.6K	5.7K	K5.7FS	5.7K	(6.5)JK	6.5K	6.5K	K(6.4)JS	K5.3FS	4.6FK	4.1FK
31	3.9FK	3.9FK	(3.4)FK	3.0FK	K(2.3)FS	3.2FK	4.5FK	5.3FK	5.6K	5.6K	(5.3)FK	6.1K	6.3K	6.0K	5.8K	6.3K	6.0	6.2F	(6.1)JF	(6.2)JF	5.9F	5.5F	5.7F	5.9F
Median	5.4	5.2	5.0	4.7	4.2	4.6	5.8	6.4	6.6	6.6	6.8	6.6	6.8	6.8	6.8	7.1	7.0	7.3	7.5	7.2	7.0	6.4	5.9	5.7
Count	30	30	30	29	29	30	31	29	28	28	27	29	29	31	31	31	31	31	31	30	30	30	30	29

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1946 O - 702519

Form adopted June 1946

TABLE 47

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

h'F1 (Characteristic), km (Unit), August (Month), 1948

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W. J.J.S. J.M.C.

Calculated by: N.N.M., K.L.W.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							Q^{K}	$(240)^{A}_{K}$	200^{K}	200^{K}	190^{K}	200^{K}	$(200)^{A}_{K}$	200^{K}	200^{H}_{K}	B^{K}	200^{S}_{K}	210^{K}	230^{K}					
2							Q^{K}	Q^{K}	200^{K}	200^{K}	$(180)^{A}_{K}$	180^{K}	200^{K}	200^{K}	210^{K}	200^{K}	220^{K}	220^{K}	220^{K}					
3							Q	$(200)^{A}$	200^{H}	$(200)^{A}$	190	$(220)^{H}$	200	180^{H}	190	200	210	230	$(220)^{A}_{S}$					
4							Q	Q	200	200	200	200	200	200	230	210	210	210	230					
5							Q	Q	210	200	180	180	180^{H}	230	200	200	200	$(230)^{A}$	$(230)^{A}$					
6							Q	$(230)^{A}$	210	$(200)^{A}$	A	$(200)^{A}$	200	200	200	200	230	220	Q					
7							250^{K}	210^{K}	200^{K}	A^{K}	A^{K}	A^{K}	A^{K}	A^{K}	200^{K}	210^{H}_{K}	210^{K}	210^{K}	230^{K}					
8							Q^{K}	230^{K}	220^{H}_{K}	180^{K}	$(180)^{H}_{K}$	230^{K}	210^{K}	200^{K}	200^{K}	$(210)^{S}_{K}$	$(250)^{A}_{K}$	A^{K}	270^{K}					
9							Q^{K}	220^{K}	200^{K}	200^{K}	180^{K}	200^{K}	170^{K}	$(180)^{C}_{K}$	200^{K}	$(210)^{A}_{K}$	210^{K}	210^{F}_{K}	240^{K}					
10							Q^{K}	200^{K}	220^{K}	200^{K}	C^{K}	C^{K}	230^{K}	210^{H}_{K}	230^{K}	210^{K}	220^{K}	230^{H}_{K}	A^{K}					
11								230^{K}	$(250)^{A}_{K}$	190^{K}	A^{K}	200^{K}	180	200	210^{N}	$(210)^{C}$	S	200						
12							250^{K}	220^{K}	$(200)^{C}_{K}$	$(200)^{H}_{K}$	$(180)^{C}_{K}$	C^{K}	200^{K}	200^{K}	B^{K}	$(210)^{S}_{K}$	$(200)^{S}_{K}$	$(220)^{A}_{K}$	230^{K}					
13							Q^{K}	$(210)^{A}_{K}$	$(210)^{A}_{K}$	240^{K}	A^{K}	180^{K}	170^{K}	200^{K}	200^{K}	C^{K}	A^{K}	A^{K}	230					
14								Q	A	170	180	210	190	210	200	230	200	220	230					
15							Q	230	200	$(200)^{A}$	250	210	200	200	A	210	210	210^{H}	$(230)^{A}$					
16							Q	A	A	190	A	180	$(200)^{A}$	200	200	200	210	210^{H}						
17							Q	Q	200	A	210	$(220)^{A}$	180	$(210)^{A}$	200	210	$(210)^{C}$	230^{H}						
18							Q	Q	$(210)^{A}$	C	C	200	200	200	210	210	220^{H}	220	A					
19							Q	230	210	180	180	180	220	200	190	$(200)^{C}$	210	230	Q					
20							Q	Q	Q	210	220	$(230)^{C}$	180	210	200	200	220	C	Q					
21								A	220	A	$(200)^{A}$	200	200	230	220	220	210	230	A					
22								C	C	A	200	180^{H}	220	230	240	220	230	220	240					
23							250	230	220	200	C	180	200	$(210)^{C}$	$(200)^{A}$	$(200)^{C}$	220	210						
24								Q	230	210	200	180	200	200	200^{H}	200	210	220	Q					
25								220	200	210	200	230	C	200	200	210	210	230	Q					
26								C	C	C	C	200	200^{H}	210	C	$(210)^{A}$	A	A	A					
27								200	A	A	200	A	$(210)^{C}$	180	210	220	A	Q						
28								Q	200^{H}	200	180	220	200	200	240	220	200	220						
29								230^{K}	220^{K}	200^{K}	200^{K}	220^{K}	220^{K}	220^{K}	200^{K}	200^{K}	220^{K}	A^{K}	Q^{K}					
30								Q^{K}	210^{K}	200^{K}	180^{K}	210^{K}	$(190)^{C}_{K}$	230^{K}	220^{K}	220^{K}	220^{K}	230^{K}	Q^{K}					
31								$(230)^{A}_{K}$	210^{K}	200^{K}	200^{K}	180^{K}	190^{K}	$(220)^{C}_{K}$	240^{K}	230^{K}	220	210						
Median								230	210	200	195	200	200	200	200	210	210	220	230					
Count								17	25	24	22	27	29	30	28	29	27	25	13					

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 48

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

f°F1 (Characteristic), Mc (Unit), August (Month), 1948

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5° W.

75° W. Mean Time

National Bureau of Standards (Institution)

Scaled by: E. J. W., J.J.S., J.M.C.

Calculated by: M.C.E., G.G.H.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							Q K	4.2 K	4.5 K	4.7 K	4.9 K	4.9 K	5.0 K	5.2 K	5.1 HK	(4.9) BK	4.9 K	4.8 K	L K					
2							Q K	Q K	4.9 K	4.9 K	5.0 K	4.9 K	5.2 K	5.2 K	5.1 K	5.1 K	5.0 K	4.7 K	L K					
3							Q	L	L	5.2	5.0	5.3	5.3	(5.4) HS	5.1	(5.1) S	4.9	4.9	L					
4							Q	Q	L	5.3	5.6	L	5.4	5.3	5.3	5.3	5.4	4.9	L					
5							Q	Q	4.8	5.3	5.3	5.0	5.4 H	5.3	5.3	5.5	4.9	L	L					
6							Q	L	L	L	5.7	5.7	5.6	5.7	5.3	5.3	L	L	Q					
7							L K	4.1 K	4.3 K	(4.7) AK	A K	A K	A K	A K	4.9 K	5.3 K	5.1 K	4.7 K	L K					
8							Q K	3.7 FK	3.9 FK	4.3 K	4.5 K	4.7 K	4.7 K	4.7 K	(4.6) SK	4.5 K	4.3 K	4.9 FK	4.3 FK					
9							Q K	4.1 FK	4.3 FK	4.5 K	4.6 K	4.8 K	4.6 K	(4.9) CK	4.9 K	(4.7) CK	4.7 K	4.5 FK	L K					
10							Q K	4.1 FK	4.3 FK	4.4 K	C K	C K	4.9 K	4.7 K	4.7 K	4.5 K	4.5 K	4.4 K	L K					
11							Q K	4.5 FK	4.5 K	4.9 HK	4.9 HK	4.8 K	5.4	[5.4] C	(5.5) H	5.1	S	L						
12							3.9 FK	4.1 K	4.4 K	4.7 K	4.7 K	(4.9) K	(5.0) K	5.0 K	[4.8] K	4.7 K	4.8 K	4.7 K	L K					
13							Q K	4.2 K	4.8 K	4.9 K	5.0 K	C K	C K	(5.0) BK	(5.2) HK	[5.1] CK	5.0 K	4.5 K	L					
14								Q	4.6	5.0	5.1	N S	C	5.2	5.3	4.9	4.9	4.6	L					
15							Q	L H	L	5.1	L	L	5.5	C	L	5.4	L	L	L					
16							Q	L	L	4.5	5.4	5.7	5.6	5.5	5.4	5.5	5.3	L						
17							Q	Q	L	L	5.5	5.8	(5.9) C	5.5	5.7	5.9	L F	L						
18							Q	Q	5.0	C	C	5.4	5.5	5.6	5.4	5.6	5.4	5.0	L					
19							Q	L	L	L	L	6.2	6.0	6.1	6.0	5.7	L	L	Q					
20							Q	Q	Q	(5.8) P	L	6.1	5.8	5.8	5.5 H	5.5 H	5.5	L	Q					
21								A	4.9	5.1	5.4	5.7 H	5.5	5.6	5.6	5.9	L	L	L					
22								C	C	5.1	5.7	5.7	5.7	6.0	5.8	5.6	L	L	L					
23							L	L	L	(6.1) S	[5.8] C	5.5 H	5.9	5.6	5.7	5.6	L	L						
24								Q	L	L	5.5	5.5	5.7	5.5	5.4	5.5	5.3	4.5	Q					
25								L	L	L	5.7	(5.7) C	(5.9)	L	5.5	L	L	L	Q					
26								C	C	C	C	(5.7) C	5.3 H	5.8	C	L H	A	A	A					
27								L	L H	C	L	A	L	5.7	5.3	L	L	Q						
28								Q	L	L	4.9	(5.7) C	5.9	5.5	L	L	4.5	L						
29								L K	L HK	4.7 FK	K(5.1) FS	K(5.0) FC	4.9 K	5.1 K	4.9 K	(4.7) SK	4.8 K	A K	Q K					
30								Q K	L K	4.7 FK	4.9 K	4.8 K	4.9 HK	4.9 K	4.7 K	4.7 FK	S K	L K	Q K					
31								L K	4.5 K	4.9 K	4.8 K	4.9 K	4.9 K	4.9 HK	4.9 K	4.9 HK	4.9	L						
Median								4.1	4.5	4.9	5.1	5.4	5.4	5.4	5.3	5.3	4.9	4.7						
Count							1	8	14	22	23	24	27	28	28	27	19	13	1					

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 49

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

h'E (Characteristic), km (Unit), August (Month), 1948

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W. J.J.S. J.M.C.

Calculated by: N.N.M., G.G.H.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							100K	100K	100K	100K	100K	100K	100K	100K	100K	BK	100K	100K	100K	110K				
2						120K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	110				
3							100	100	100	100	100	100	100	100	100	100	100	100	100	100				
4							100	100	100	100	100	100	100	90	100	100	100	100	100	110				
5							100	100	100	100	100	100	100	100	100	100	100	100	100	110				
6							100	100	100	100	100	100	100	100	100	100	100	100	100	100				
7							100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	110K				
8							100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	BK	BK				
9							(110)BK	100K	100K	100K	100K	100K	B	100K	100K	100K	100K	100K	100K	130K				
10							100K	100K	100K	100K	CK	CK	100K	100K	100K	100K	100K	100K	100K	100K				
11							100K	100K	100K	100K	100K	100K	90	C	100	100	100	100	100	100				
12							100K	100K	100K	100K	100K	100K	100K	100K	BK	100K	100K	100K	100K	(110)CK				
13							AK	100K	100K	100K	100K	100K	100K	100K	100K	CK	100K	100K	100	100				
14							A	100	100	100	100	100	100	100	100	100	100	100	110					
15							(130)A	100	100	100	100	100	100	100	100	100	100	100	100	100				
16							100	100	100	100	100	100	100	100	100	100	100	90	90	100				
17							100	100	100	100	100	100	100	100	110	100	100	100	100	100				
18							130	100	100	C	C	100	100	100	100	100	100	100	110	100				
19							100	A	100	100	100	100	100	100	100	100	100	100	110					
20							100	100	100	100	100	100	100	100	100	100	100	100	100					
21							110	100	100	100	100	100	100	100	100	100	100	100	100					
22							120	C	C	100	100	100	100	100	100	100	100	100	120					
23							A	100	100	100	C	100	100	100	100	100	100	100	100	100				
24							120	100	100	100	100	100	100	A	110	100	100	100	100					
25							A	100	100	100	100	100	100	100	100	90	100	100	100					
26							110	C	C	C	C	100	100	100	C	100	100	100	100	100				
27							A	100	100	100	100	100	100	90	100	100	100	110	100					
28							110	120	100	100	100	100	100	100	100	100	100	100	100					
29							100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	100K	110K					
30							100K	100K	100K	100K	100K	90K	90K	90K	100K	100K	100K	100K	100K					
31							100K	130K	100K	AK	100K	AK	100K	100K	100K	100K	100	100	100					
Median							100	100	100	100	100	100	100	100	100	100	100	100	100	100				
Count							26	28	29	28	27	29	30	29	29	29	31	31	30	18				

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U S GOVERNMENT PRINTING OFFICE 1946 O - 702519

TABLE 50

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

Form adopted June 1946

IONOSPHERIC DATA

f°E (Characteristic), Mc (Unit), August (Month), 1948

Observed at Washington, D. C.

Lat 39.0°N, Long 77.5°W

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W., J.J.S., J.M.C.

Calculated by: N. N. M., K.L.W.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A K	2.7 K	A K	A K	A K	3.9 K	[3.9] A K	3.9 K	3.9 K	[3.7] B K	3.5 K	(3.1) S K	[2.6] A K	2.0 K				
2						1.5 K	2.3 K	[2.6] A K	(3.0) A K	A K	A K	A K	A K	A K	3.9 K	3.8 K	3.5 K	3.1 K	2.4 K	1.9				
3							2.0	2.5	[3.0] A	(3.5) A	A	A	A	(3.8) A	[3.6] A	(3.5) A	A	A	A	A				
4							2.2	2.7	(3.2) A	3.5	3.5	[3.8] A	4.0	(3.9) A	3.9	3.8	3.6	3.3	2.6	1.7				
5							2.2	2.7	3.1	3.3	3.5	3.5	A	A	3.7	3.7	3.5	3.1	2.5	1.7				
6							2.1	3.1	3.2	(3.5) A	[3.6] A	3.7	[3.8] A	(3.9) S	[3.8] A	3.8	3.5	3.1	(2.5) A	A				
7							(2.3) A K	A K	A K	3.7 K	[3.8] A K	(3.8) A K	3.9 K	3.9 K	A K	A K	3.5 K	K (3.2) A F	2.6 K	A K				
8							A K	2.7 K	3.1 K	3.3 K	3.7 K	(3.5) A K	(3.8) A K	(3.7) K	(3.6) S K	3.4 K	(3.3) A K	(3.1) A K	B K	B K				
9							2.1 K	A K	A K	A K	(3.7) A K	A K	B K	3.7 K	(3.5) C K	[3.4] A K	3.3 K	3.0 K	2.5 K	1.9 K				
10							2.2 F K	(2.7) F K	3.1 K	3.5 K	C K	C K	(3.5) C K	3.6 K	3.7 K	3.5 K	3.3 K	3.0 K	2.3 K	A K				
11							1.9 H K	2.7 F K	3.3 K	3.5 K	A K	A K	C	C	C	C	(3.5) S	3.0	[2.4] S	(1.9) C				
12							A H K	A H K	A K	(3.3) C K	A K	C K	B K	C K	B K	(3.8) S K	(3.4) S K	(3.0) A K	2.3 K	1.7 K				
13							2.1 K	K [2.5] A H	(2.9) A K	3.1 K	A K	A K	A K	B K	B K	C K	3.5 K	3.1 K	2.5	A				
14							2.2	[2.6] A	3.0	3.5	C	A	(3.9) C	3.7	3.8	3.9	3.5	3.0	2.5					
15							2.1	[2.6] A	(3.1) A	A	3.6	(3.7) C	[3.8] C	3.9	3.8	3.6	3.5	(3.0) A	A	A				
16							A	A	A	A	(3.3) A	C	A	C	C	(3.7) C	3.6	3.1 F	2.5	A				
17							A	A	3.0	3.2	A	A	4.0	[3.9] A	3.9	3.7	3.5	3.1	2.4	A				
18							2.1	(2.9) A	A	C	C	(3.9) F	C	C	C	3.4	3.6	3.1	2.6	A				
19							2.1 H	[2.7] A	3.3	3.7	C	C	C	C	(3.7) C	(3.3) C	3.5	(2.9) A	A					
20							2.3	(2.8) A	(3.1) A	3.2	C	C	C	C	(3.7) C	(3.7) C	3.5	[3.0] C	2.6					
21							2.0	2.8	3.2	A	A	A	A	4.0	4.0	(3.7) C	3.3	3.1	2.3					
22							2.0	C	C	3.5	A	A	(3.7) C	[3.8] C	4.0	3.8	3.6	3.2	2.0					
23							2.1	A	A	A	C	A	C	A	A	3.7	3.3 F	3.1 F	2.4	A				
24							2.1	2.5 F	3.1	3.5	(3.7) C	C	C	A	(3.7) C	3.7	3.5	3.0	2.3					
25							A	2.7	[2.9] A	3.1	A	A	C	C	3.9	3.5	(3.3) F	2.9	(2.1) A					
26							1.9 H	C	C	C	C	C	C	C	C	(3.5) C	3.3	(2.9) A	A	A				
27							2.0 F	2.6	(3.1) A	3.3	C	A	C	C	3.8	3.6	(3.5) A	2.9	2.1					
28							2.0 H	2.7 H	3.1 H	[3.2] A	3.3	[3.5] C	3.7	[3.8] C	3.8	3.7	3.4	3.0	(2.3) F					
29							2.0 K	2.5 K	(2.9) H K	3.3 F K	3.8 K	(3.8) C K	[3.8] A K	3.9 K	3.8 K	3.6 K	(3.5) S K	2.7 K	1.9 K					
30							A K	A K	3.1 K	3.1 K	3.5 K	3.6 K	[3.8] C K	3.9 K	3.7 K	3.5 K	3.2 K	K [2.6] A C	(2.0) A K					
31							A K	2.7 K	3.1 F K	3.3 K	A K	A K	3.9 K	3.7 K	[3.6] S K	3.5 K	3.2	2.7	2.1					
Median							2.1	2.7	3.1	3.3	3.6	(3.7)	(3.8)	3.9	3.8	3.7	3.5	3.0	2.4	1.9				
Count						1	23	22	22	22	12	11	14	17	23	28	30	30	26	7				

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1946 O - 703519

Form adopted June 1946

TABLE 51

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

IONOSPHERIC DATA

Es (Characteristic), Mc, km (Unit), August (Month), 1948

Observed at Washington, D. C.

Lat. 39.0°N, Long. 77.5°W

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by: E. J. W., J. J. S., J. M. C.

Calculated by: J. T. D., F. H. L.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1		2.3 120	2.3 120	4.3 100	3.9 100	3.9 100	3.4 100	6.5 100	3.7 100	4.0 100	4.2 100		5.6 100	4.0 110			7.0 100		3.2 100					
2				2.2 110			3.0 100	4.2 100	4.3 100	4.6 100	4.8 100	3.9 100	4.8 100	4.2 100	4.3 110		4.8 100	4.3 100	3.6 100			1.9 100	3.7 100	3.8 100
3	3.4 100		2.2 100	2.2 100		2.0 100	3.6 100	5.4 100	5.2 110	4.9 100	4.6 100	5.0 100	4.0 100	4.3 100	5.1 100	4.6 100	3.7 100	3.2 100	5.8 100	3.4 100	3.0 90	5.1 90	3.1 100	4.0 90
4		3.3 100	2.3 100		2.1 90	2.0 100	3.6 110	5.6 110	8.8 100		3.9 100	3.9 100		4.1 110					3.8 110	3.0 100		4.8 100	1.9 100	
5		3.2 100	1.9 100		2.8 100		3.4 110	4.2 100	3.6 100		4.0 100	5.2 100	4.6 100	4.8 100			4.2 120	4.6 100	3.9 100	3.5 110	4.9 100	3.3 100		
6	1.9 120	3.0 100			2.3 100	3.7 100	3.8 100	3.7 100	4.6 100	5.6 100	5.7 100	5.2 100	4.4 100		3.9 100		4.7 110	4.4 100	9.0 100	4.8 100	5.6 100	1.9 110	3.2 130	2.0 100
7		2.3 100			3.8 100	9.5 100	3.1 120	3.8 100	5.4 100	4.8 100	7.8 100	7.7 100	7.7 100	7.4 100	4.5 100	5.6 100	3.9 100	3.8 100	3.0 120	3.4 110			2.3 110	
8			3.6 110	2.1 100	2.2 110	C	2.5 100		3.9 100			3.7 110	4.0 100				3.9 130	4.0 110						
9				3.9 100			2.3 110	3.0 100	3.8 100	3.7 100	4.2 130	5.2 110				4.1 110								1.9 120
10	2.8 100	2.3 100	5.6 100	3.3 100	1.9 100	4.7 90	3.2 110	4.8 110			C	C				7.4 120			4.3 100	3.5 100	1.9 100		3.2 110	3.3 110
11	3.5 110	9.9 130						3.4 100	3.6 110		4.7 100	3.7 100			4.1 120				3.5 100	3.2 100	1.9 100		4.3 100	4.6 100
12	2.0 110	3.6 110	2.7 130	3.4 100			5.8 140	2.9 100	3.1 100	3.4 90	3.6 90				B			4.9 100						
13	3.5 120	5.2 100	6.8 100	8.4 100	3.1 100	4.0 100	2.0 100	3.2 100	3.2 100	3.7 100	5.6 100	3.9 100	3.6 100			C	5.7 110	3.5 110	3.6 110	2.1 100	3.9 100	5.7 100	5.9 100	9.0 100
14	5.8 100	5.2 100	4.9 100	4.3 100			2.0 110	2.9 100	3.7 100			5.5 100						4.3 100				2.9 100		
15	1.9 110	3.1 110	4.9 100	4.7 100	2.3 110	2.0 100	6.8 100	3.7 100	4.5 100	4.4 100					5.8 110	4.4 110		3.4 100	3.4 100	1.9 100				3.8 100
16		2.4 100	3.4 100	3.5 100	3.1 100	3.5 100	6.3 100	4.4 100	5.3 100	4.5 100	5.8 100		4.5 100			3.1 90	2.9 90			3.0 100		2.4 100	3.1 100	3.2 100
17	3.2 100	3.4 100	2.3 100		2.5 100	3.1 100	3.4 100	4.3 100	3.4 100	4.9 100	5.8 100	5.0 100	4.2 100	4.9 90	4.3 90	4.2 90	2.4 90	3.0 90	3.6 90	2.9 120	3.0 100	4.5 100		2.3 100
18	2.4 100						2.3 110	3.1 130	4.1 100	C	C								3.0 110	2.0 100	3.4 100	4.6 100	C	2.3 90
19	3.1 100	3.7 100	3.1 100				2.0 110	3.4 100	4.6 100	4.6 100								3.5 120	2.4 120					
20								3.0 110	3.3 100	3.9 100		5.0 100										3.3 100	2.4 100	
21								3.5 100		5.9 100	4.2 100	5.3 100	4.6 100						3.9 110	3.4 100	2.7 110		3.1 100	
22			2.6 100	3.0 100		1.2 100	1.8 100	C	C	6.8 100	6.3 100	4.3 100					4.0 110		2.0 100		3.2 100			
23							2.0 110	3.0 100	3.4 100	3.5 100	C	3.3 100		4.0 100	3.8 100	2.7 90	3.8 110	3.2 100	3.3 120	1.8 110	3.1 90			
24								3.2 110						3.4 90	2.9 90	2.4 90			3.1 100	1.7 100	1.7 90	4.0 100	1.8 100	3.2 100
25							2.0 110		3.4 100	3.3 100	3.3 90	3.6 100	3.5 100		2.7 90		3.5 100	1.8 90	3.3 110	3.3 100	4.7 100	3.5 100	3.0 100	3.3 100
26	2.7 100	2.9 100		3.1 100				C	C	C	C				C	4.3 110	7.0 100	6.9 100	4.9 100	1.8 100	7.8 100	4.9 100	4.7 100	6.8 100
27	6.9 100	5.7 100	5.3 100	5.7 100	4.9 100	3.2 100	7.2 100	3.9 100	5.5 100	8.3 100		9.6 100	4.0 100		3.1 90	4.1 90	4.3 90	3.9 80	3.4 100			1.9 100	3.4 100	2.9 100
28					2.4 100			3.2 100	3.9 100	3.4 100		3.4 90										3.5 100		
29				3.1 120	3.2 110			3.6 100	3.9 100				5.4 100					7.3 100	3.8 120			2.4 100		3.0 120
30				2.9 120	3.2 110	3.8 100	3.4 100	3.5 100							2.9 90			4.1 100	2.3 100				3.4 90	4.4 90
31			2.9 110	3.1 110		3.1 100	3.0 100	3.1 100		3.1 90	3.1 100	3.1 90		5.4 90	4.2 110									
Median	✳ ✳	2.3	1.9	2.2	✳ ✳	✳ ✳	2.5	3.5	3.7	3.7	3.9	3.7	✳ ✳	✳ ✳	✳ ✳	✳ ✳	✳ ✳	3.2	3.3	1.8	✳ ✳	1.9	1.8	2.0
Count	31	31	31	31	31	30	31	29	29	29	27	30	31	31	29	30	31	31	31	31	31	31	30	31

✳ ✳ MEDIAN fEs LESS THAN MEDIAN f°E OR LESS THAN LOWER FREQUENCY LIMIT OF RECORDER

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE : 1946 O - 702512

TABLE 52

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

Form adopted June 1946

F2-M1500, ____ (Characteristic) (Unit) August, 1948 (Month)

Observed at Washington, D. C.

Lat 39.0°N, Long 77.5° W

IONOSPHERIC DATA

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by: E. J. W. J.J.S., J.M.C.

Calculated by: J. L. K., N. M. M

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	FK	(1.6)JFK	(1.9)JFK	2.1FK	1.7FK	1.8FK	1.9K	GK	1.6K	1.6K	1.5K	1.6K	GK	1.6K	1.6K	GK	1.7K	(1.7)JSK	1.8K	1.9K	1.8K	1.9K	1.8K	(1.8)JK
2	(1.9)JK	1.9K	1.7K	1.7K	1.7K	1.9K	1.9K	2.2K	1.7K	1.7K	1.6K	GK	GK	1.5K	1.7K	1.8K	1.9K	1.9K	2.0K	(2.1)J	2.1	1.9	1.9	1.9
3	1.8	1.9	1.7	1.8	1.8	2.0	2.2	2.2	1.9	2.0	1.9	1.8	(1.6)J	1.6	1.7	1.7	1.8	1.7	1.9	2.0	2.0	1.8	(1.9)J	(1.7)J
4	1.8	1.9F	1.9F	1.9F	1.9F	2.0	(2.2)S	2.3	(2.3)F	2.0	1.9	2.0	1.8	1.7	1.7	1.8	1.9	1.9	2.0	2.0	2.0	(1.9)JF	(1.8)JF	(1.8)JF
5	(1.7)JF	1.8F	2.0F	(2.0)JF	2.0	2.0	2.3	2.2	2.0	1.8	2.0	1.8	1.8	(1.8)J	G	1.8	1.9	1.9	2.0	2.1	1.9	(2.0)J	(1.8)JS	1.9
6	1.8F	1.8F	1.9F	1.9F	1.8F	(1.4)F	2.2K	2.1K	2.1K	2.0K	1.9K	(2.0)JK	1.8K	1.8K	2.0K	2.0K	1.9K	2.0K	1.9K	2.0K	(2.0)JK	(2.0)JSK	(1.9)JK	(1.9)JK
7	F1.8K	1.7K	1.8K	1.7K	1.8FK	1.9FK	1.9K	1.7K	1.7K	GK	1.6K	1.5K	AK	1.5K	1.7K	1.7K	1.7K	1.9K	1.9K	(1.9)JK	(1.8)JK	1.7K	1.8K	1.9K
8	1.8K	FK	FK	NCK	1.5FK	NCK	2.1FK	GK	GK	GK	GK	GK	GK	GK	GK	GK	GK	1.5FK	GFK	(1.7)FK	1.9FK	1.5FK	1.6FK	1.6FK
9	(1.6)FK	(1.5)FK	1.7FK	1.9FK	1.9FK	2.1FK	2.1FK	GK	GK	GK	GK	GK	GK	GCK	1.5K	1.7K	1.7FK	1.8K	1.9K	1.9K	(2.0)SK	1.9K	1.8K	(1.9)FK
10	(1.9)JK	FK	FK	(1.7)FK	1.7FK	1.7FK	2.0FK	GK	GK	GK	CK	CK	GK	GK	1.7K	GK	1.8K	1.8FK	1.9K	2.0FK	1.9FK	(1.9)FSK	(1.8)FK	(2.0)JFK
11	(2.0)FK	(2.0)FK	1.7FK	(1.7)JFK	FK	(1.9)FK	2.2FK	GK	1.7K	1.9K	(2.1)CK	GK	1.8	2.0	2.0	2.1	2.1	1.9	2.1	2.0	2.0	(1.9)S	(2.0)JF	(1.8)JF
12	2.0F	1.8F	(1.8)FVK	(1.6)FK	(1.9)FK	(1.9)FK	(1.8)FK	1.7FK	GK	GK	GK	GK	(1.5)CK	1.4K	BK	1.7K	1.8K	2.0K	1.8K	1.9K	(2.1)JFK	(1.9)JFK	(2.2)FK	J(2.0)FVK
13	1.8FK	1.7FK	(1.8)AK	1.7FK	1.9FK	(2.0)FK	(2.1)FK	2.0FK	1.8FK	2.1K	1.7K	GCK	GCK	GK	1.8K	CK	(1.9)JK	(1.9)JK	2.0F	(2.1)CF	2.1F	(2.2)J	2.0F	1.7
14	1.8F	2.0F	1.9F	2.0F	1.9F	2.1F	2.2	2.1F	(2.1)C	(1.8)C	1.7	NSC	(1.7)C	1.7	C	1.7	(1.9)J	(2.0)J	2.0	N	(1.9)J	(1.9)J	1.9	1.9
15	(1.8)J	1.9P	1.9F	1.8F	1.9F	2.0F	2.2	2.2	(2.2)J	(2.0)F	(2.2)J	2.1	2.0	1.8	1.9	1.9	1.9	2.0	2.1	2.1	1.9	2.0	(2.0)J	1.8
16	1.8	1.9	1.9F	2.0	1.9F	(2.0)S	2.3	(1.9)F	2.1	2.2	(2.0)JS	(1.8)C	1.8	1.9	1.9	1.9	1.9	2.0	1.9	2.0	1.9	1.9	(1.9)J	2.0
17	1.9	1.9	1.9F	2.0	1.8F	2.0F	2.4F	2.2F	(2.2)FC	1.9	2.1	1.8	1.7	1.9	1.8	1.8	1.9	2.0	1.9	1.9	2.0	1.9F	1.9	1.9F
18	1.9F	1.9F	1.9F	1.8F	1.8F	1.8F	2.0F	2.1	2.0F	C	C	(1.7)J	1.7	1.7	1.7	1.7	1.7	1.8	1.9	2.0	1.8	1.9	C	1.8
19	1.8	(1.9)J	1.9	1.9	1.8	1.9F	2.1	2.1	2.1	(2.3)P	(1.9)P	1.9	1.9	1.9	1.8	1.9	1.9	2.0	1.9	1.9	1.8	(1.8)JF	1.7	(1.8)J
20	1.6	1.7	1.7	1.6	1.8	(1.9)J	2.0	1.9	1.9	2.0	(1.9)JC	1.7	1.9	1.7	1.8	1.8	1.7	1.8	1.8	1.9	1.9	1.8	1.8	1.8
21	1.7	(1.7)C	1.8	1.8	(1.7)J	1.8	2.0	1.9	1.9	2.1	(1.7)J	1.8	1.8	1.8	1.8	1.7	1.8	1.8	1.9	1.9	2.0	1.9	1.8	1.9
22	1.9F	1.7F	1.7	1.7	1.9	1.9	2.2	C	C	1.9	1.8	1.9	1.8	1.8	1.9	1.8	1.8	1.9	2.0	1.9	(2.0)C	2.0	2.1	(1.8)J
23	(1.7)J	(1.9)C	1.8	1.8	1.8	1.8	2.0	1.9	2.1	1.8	C	1.9	1.8	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	(1.9)J	(1.9)J	(1.8)J
24	(1.8)J	1.8	1.8	2.0	1.8F	1.8	2.0F	2.0	(2.0)J	(2.0)J	(1.8)J	1.7	(1.7)J	1.8	1.9	1.8	1.8	1.9	2.0F	2.0F	(2.2)FJ	(1.9)J	(1.9)J	(1.8)JF
25	(1.8)JF	(2.0)JF	(1.9)JF	(2.0)F	1.9F	2.0F	2.3F	2.1	2.0	2.1	2.1	2.0	1.9	1.9	2.0	1.9	2.0	2.0	1.9	2.0	(2.1)J	2.1	(1.9)F	1.8F
26	1.8	1.9	1.9F	1.9F	2.0	2.0	(2.2)J	C	C	C	C	(1.9)JC	2.0	1.9	C	1.9	1.9	2.0	(2.0)C	2.1	(2.1)P	1.9	(2.0)J	A
27	A	(1.9)A	1.9F	1.9F	1.9F	1.9F	2.3	2.1	(2.0)JH	(2.1)J	2.2	A	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.1	2.0	1.9	1.9	(1.9)J
28	(1.9)J	1.8	1.9	1.8	1.9	2.0	2.1	(2.3)JS	2.2	2.2	2.2	2.1	2.0	2.0	1.9	1.9	2.0	1.9	2.0	2.0	2.0	2.0F	1.9K	1.9K
29	(2.0)JK	1.7K	1.9K	1.9K	2.0K	(1.8)FK	2.0FK	2.2K	(2.0)JK	(1.8)FK	1.8K	(1.7)FK	1.6K	1.6FK	1.8K	1.9K	(1.9)JSK	1.9K	2.0K	2.1K	1.9K	1.8K	1.9K	1.9K
30	1.7FK	1.8K	1.7K	1.7K	1.8FK	1.8K	2.2K	2.1K	2.2FK	1.9FK	1.8FK	1.6K	1.7FK	1.6FK	1.7K	1.7FSK	(1.8)SK	1.9K	2.1FK	2.0K	2.0K	2.0FK	2.0K	1.8K
31	1.8FK	1.9FK	1.9FK	(2.0)FK	(1.6)FK	(2.0)FK	2.0FK	2.0FK	1.9FK	1.8K	1.6HK	1.5FK	1.9FK	1.9K	1.9K	K(1.9)JF	1.9	2.0	2.1	(2.0)J	(1.9)JF	1.8F	1.7F	1.7
Median	1.8	1.9	1.9	1.8	1.8	1.9	2.1	2.1	2.0	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	2.0	2.0	2.0	1.9	1.9	1.8
Count	29	29	29	30	30	30	31	29	29	29	27	28	30	31	28	30	31	31	31	30	31	31	30	30

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 53

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

Form adopted June 1946

F2-M3000 (Characteristic), ____ (Unit), August (Month), 1948

Observed at Washington, D.C.

Lat 39.0°N, Long. 77.5°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: E. J.W., J.J.S., J.M.C.

Calculated by: J.L.K., N.N.M.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	F K	K(2.5)JF	K(2.8)JF	3.0FK	2.5FK	2.6FK	2.9K	G K	2.4K	2.3K	2.2K	2.2K	G K	2.4K	2.5K	G K	2.6K	K(2.6)JS	2.7K	2.9K	2.7K	2.8K	2.8K	(2.7)JK
2	(2.9)JK	2.8K	2.6K	2.6K	2.6K	2.9K	2.9K	3.1K	2.6K	2.5K	2.4K	G K	G K	2.3K	2.5K	2.7K	2.9K	2.8K	3.0K	(3.0)J	2.9	2.8	2.9	2.8
3	2.8	2.8	2.6	2.7	2.7	3.0	3.1	3.3	2.9	3.0	2.9	2.7	(2.5)J	2.5	2.5	2.7	2.8	2.6	2.9	3.0	2.9	2.7	(2.8)J	(2.6)J
4	2.7	2.8F	2.9F	2.8F	2.8F	2.9	(3.2)S	3.4	(3.4)F	3.0	2.9	3.0	2.7	2.6	2.6	2.7	2.9	2.8	2.8	3.0	2.9	(2.8)JF	(2.7)JF	(2.8)JF
5	(2.7)JF	2.8F	2.9F	(3.0)JF	3.0	2.9	3.4	3.2	3.0	2.8	3.0	2.7	2.7	(2.5)J	G	2.8	2.8	2.8	2.8	3.1	2.9	(2.9)J	(2.8)JS	2.9
6	2.8F	2.7F	2.9F	2.9F	2.7F	(2.9)F	3.2	3.2	3.1	3.0	2.9	(3.0)J	2.8	2.8	2.9	2.9	2.8	3.0	2.9	3.0	(3.0)J	(3.0)JS	(2.8)J	(2.8)J
7	2.7	2.5	2.7	2.5	2.6F	2.8F	2.8K	2.5K	2.6K	G K	2.3K	2.3K	A K	2.3K	2.6K	2.5K	2.6K	2.8K	2.9K	(2.9)JK	(2.7)JK	2.6K	2.7K	2.7K
8	2.7FK	F K	F K	N CK	2.3FK	N CK	3.0FK	G K	G K	G K	G K	G K	G K	G K	G K	G K	G K	2.3FK	G FK	(2.6)FK	2.8FK	2.4FK	2.4FK	2.3FK
9	(2.3)FK	(2.3)FK	2.5FK	2.8FK	2.8FK	3.0FK	3.1FK	G K	G K	G K	G K	G K	G K	G CK	2.3K	2.5K	2.5FK	2.7K	2.8K	2.8K	(3.0)SK	2.9K	2.7K	(2.8)FK
10	(2.9)JK	F K	F K	(2.5)FK	2.6FK	2.6FK	2.9FK	G K	G K	G K	C K	C K	G K	G K	2.5K	G K	2.8K	2.6FK	2.8K	2.9FK	2.8FK	K(2.9)FS	(2.8)FK	K(3.1)JF
11	(3.0)FK	(2.8)FK	(2.5)FK	K(2.5)JF	F K	(2.8)FK	3.2FK	G K	2.6K	2.8K	(3.2)CK	G K	2.7	3.0	3.1	3.1	3.1	2.9	3.2	3.0	3.0	(2.8)S	(2.9)JF	(2.8)JF
12	3.0F	2.7F	K(2.6)FV	(2.4)FK	(2.7)FK	(2.8)FK	(2.8)FK	2.8FK	G K	G K	G K	G K	(2.3)CK	2.2K	B K	2.5K	2.8K	3.0K	2.8K	2.9K	K(3.2)JF	K(2.9)JF	(3.2)FK	YK(3.0)JF
13	2.7FK	2.6FK	(2.7)AK	2.6FK	2.8FK	(3.0)FK	(3.0)FK	3.0FK	2.7FK	3.1K	2.5K	G CK	G CK	G K	2.8K	C K	(2.9)JK	(2.8)JK	3.0F	(3.1)SF	2.8F	(3.2)J	2.9F	2.7
14	2.6F	3.0F	2.9F	2.9F	2.9F	3.1F	3.3	3.1F	(3.1)C	(2.7)C	2.5	N SC	(2.6)C	2.7	C	2.7	(2.9)J	(3.0)J	3.0	N	(2.9)J	(2.9)J	2.9	2.9
15	(2.8)J	2.8F	2.9F	2.8F	2.8F	2.9F	3.2	3.3	(3.2)J	(3.0)F	(3.1)J	3.1	3.0	2.6	2.9	2.9	2.9	2.9	3.1	3.0	2.9	3.0	(2.9)J	2.8
16	2.7	2.9	2.9F	2.9	2.9F	(2.9)S	3.3	(2.9)F	3.1	3.3	(3.0)JS	(2.7)C	2.7	2.8	2.9	2.7	2.9	3.0	2.9	3.0	2.8	2.9	(2.8)J	3.0
17	2.8	2.8	2.8F	2.9	2.8F	2.9F	3.4F	3.2F	(3.3)E	2.7	3.1	2.7	2.6	2.8	2.8	2.8	2.9	3.0	2.9	3.0	3.0	2.9F	2.9	2.8F
18	2.9F	2.9F	2.8F	2.8F	2.6F	2.8F	3.0F	3.2	3.0F	C	C	(2.6)J	2.6	2.6	2.6	2.6	2.6	2.6	2.8	2.9	2.8	2.9	C	2.7
19	2.8	(2.9)J	2.8	2.8	2.8	2.9F	3.1	3.1	3.1	(3.2)P	(2.9)P	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.9	2.9	2.7	(2.7)JF	2.5	(2.6)J
20	2.5	2.6	2.6	2.5	2.7	(2.9)J	2.9	2.9	2.9	3.0	(2.9)JC	2.6	2.8	2.6	2.7	2.7	2.6	2.8	2.8	2.8	2.8	2.7	2.7	2.7
21	2.4	(2.6)C	2.7	2.7	(2.6)J	2.7	2.9	2.8	2.9	3.1	(2.6)J	2.7	2.7	2.7	2.7	2.7	2.6	2.7	2.8	2.8	3.0	2.8	2.6	2.8
22	2.7F	2.6F	2.5	2.6	2.7	2.8	3.2	C	C	2.9	2.7	2.8	2.7	2.6	2.8	2.8	2.8	2.9	2.9	2.9	(2.9)C	3.0	2.9	(2.6)J
23	(2.5)J	(2.8)C	2.7	2.8	2.8	2.7	3.0	2.8	3.2	2.6	C	2.9	2.7	2.8	2.9	2.8	2.9	2.9	3.0	3.0	3.1	(2.8)J	(2.9)J	(2.6)J
24	(2.7)J	2.7	2.8	2.7	2.7F	2.7	3.0F	3.0	3.0	(3.1)J	(2.6)J	2.5	(2.6)J	2.7	2.7	2.7	2.8	2.8	3.0F	3.0F	(2.9)JF	(2.8)J	(2.9)J	(2.6)JF
25	(2.7)JF	(2.9)JF	(2.8)JF	(2.9)F	2.8F	3.0F	3.3F	3.2	3.0	3.1	3.1	3.0	2.9	2.9	3.0	2.9	2.9	2.9	3.0	3.1	(3.1)J	3.2	(2.9)F	2.7F
26	2.7	2.8	2.9F	2.9F	3.0	2.9	(3.3)J	C	C	C	C	(2.9)JC	2.9	2.8	C	2.9	2.8	2.9	(3.1)C	3.1	(3.0)P	3.0	(3.0)J	A
27	A	(2.8)A	2.8F	2.9F	2.9F	2.9F	3.3	3.2	(3.0)JH	(3.1)J	3.2	A	3.0	3.0	2.9	3.1	2.9	3.0	3.1	3.0	2.9	2.9	2.9	(2.9)J
28	(2.9)J	2.8	2.8	2.8	2.8	2.9	3.2	(3.4)JS	3.4	3.2	3.2	3.1	2.9	2.9	2.9	2.9	2.9	2.9	3.0	3.0	3.0	3.0F	2.8K	2.8K
29	(3.1)JK	2.7K	2.8K	2.9K	2.8K	(2.6)FK	2.9FK	3.3K	(3.0)JK	(2.7)FK	2.7K	(2.5)FK	2.5K	2.4FK	2.7K	2.8K	K(2.9)JS	2.8K	3.0K	3.1K	2.8K	2.7K	2.8K	2.8K
30	2.7FK	2.7K	2.6K	2.6K	2.7FK	2.7K	3.2K	3.0K	3.2FK	2.8FK	2.8FK	2.4K	2.6FK	2.4FK	2.5K	K2.7FS	(2.7)SK	2.9K	3.1FK	3.0K	2.9K	3.0FK	3.0K	2.7K
31	2.8FK	2.8FK	2.8FK	(3.0)FK	(2.4)FK	(3.0)FK	2.9FK	3.0FK	2.9FK	2.8K	2.4FK	2.3FK	2.8FK	2.9K	2.9K	K(2.9)JF	2.9	2.9	2.9	(3.0)J	(2.9)JF	2.7F	2.6F	2.6
Median	2.7	2.8	2.8	2.8	2.8	2.9	3.1	3.0	3.0	2.8	2.8	2.6	2.7	2.6	2.7	2.7	2.8	2.9	2.9	3.0	2.9	2.9	2.8	2.8
Count	29	29	29	30	30	30	31	29	29	29	27	28	30	31	28	30	31	31	31	30	31	31	30	30

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE : 1946 O - 705319

Form adopted June 1946

TABLE 54

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

F1-M3000 (Characteristic), (Unit) August (Month), 1948

Observed at Washington, D.C.

Lat 39.0°N, Long 77.5° W

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by: E.J.W., J.J.S., J.M.C.

Calculated by: J.L.K., N.N.M.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							Q^{K}	3.6^{K}	3.8^{K}	3.8^{K}	4.0^{K}	4.1^{K}	3.8^{K}	3.7^{K}	3.9^{H}_{K}	$(3.7)^{B}_{K}$	3.7^{K}	3.5^{K}	L^{K}					
2							Q^{K}	Q^{K}	3.4^{K}	3.6^{K}	3.8^{K}	4.3^{K}	3.7^{K}	3.7^{K}	3.7^{K}	3.8	3.6^{K}	3.4^{K}	L^{K}					
3							Q	L	L	3.5	3.8	3.8	3.8	$(4.0)^{H}_{S}$	4.1	$(3.7)^{S}$	3.7	3.5	L					
4							Q	Q	L	3.4	3.4	L	3.9	3.7	3.6	3.4	3.4	3.5	L					
5							Q	Q	3.7	3.5	3.8	4.1	4.1^{H}	3.6	3.6	3.4	3.6^{H}	L	L					
6							Q	L	L	L	3.3^{A}	3.4	3.4	3.5	3.3	3.4	L	L	Q					
7							L^{K}	3.4^{K}	3.8^{K}	$(3.9)^{A}_{K}$	A^{K}	A^{K}	A^{K}	A^{K}	3.9^{K}	3.4^{K}	3.3^{K}	3.4^{K}	L^{K}					
8							Q^{K}	3.4^{F}_{K}	3.6^{F}_{K}	4.0^{K}	3.9^{K}	3.8^{K}	3.8^{K}	3.8^{K}	$(3.9)^{S}_{K}$	3.8^{K}	3.7^{K}	A^{K}	2.8^{F}_{K}					
9							Q^{K}	3.2^{F}_{K}	3.7^{F}_{K}	3.9^{K}	4.0^{K}	4.0^{K}	4.2^{K}	$(3.8)^{C}_{K}$	3.7^{K}	$(3.7)^{C}_{K}$	3.6^{K}	3.4^{F}_{K}	L^{K}					
10							Q^{K}	3.4^{F}_{K}	3.7^{F}_{K}	3.9^{K}	C^{K}	C^{K}	3.6^{K}	3.8^{K}	3.7^{K}	3.9^{K}	3.6^{K}	3.4^{K}	L^{K}					
11							Q^{K}	3.6^{F}_{K}	3.6^{K}	3.9^{H}_{K}	3.8^{H}_{K}	4.0^{K}	3.7	C	$(3.5)^{H}$	$(3.7)^{C}$	S	L						
12							2.8^{F}_{K}	3.6^{K}	3.6^{K}	3.8^{K}	4.0^{K}	$(3.6)^{C}_{K}$	$(3.8)^{C}_{K}$	$(3.8)^{C}_{K}$	B^{K}	3.2^{K}	3.0^{K}	2.9^{K}	L^{K}					
13							Q^{K}	3.7^{K}	3.5^{K}	3.6^{K}	A^{K}	C^{K}	C^{K}	$(3.9)^{B}_{K}$	$(3.8)^{H}_{K}$	C^{K}	3.6^{K}	3.5^{K}	L					
14								Q	3.7	3.6	3.8	N^{S}	C	3.7	3.5	3.7	3.5	3.5	L					
15							Q	L^{H}	L	3.9	L	L	3.7	C	L	3.5	L	L	L					
16							Q	L	L	4.2	3.5	3.4	3.6	3.6	3.7	3.5	3.4	L						
17							Q	Q	L	L	3.6	4.3	$(3.4)^{C}$	3.6	3.5	3.2	L^{F}	L						
18							Q	Q	3.5	C	C	3.8	3.6	3.6	3.7	3.4	3.3	3.4	L					
19								L	L	L	L	3.4	3.5	3.4	3.5	3.6	L	L	Q					
20							Q	Q	Q	$(3.6)^{P}$	L	3.3	3.5	3.6	3.7^{H}	3.5^{H}	3.3	L	Q					
21								A	3.5	A	3.7	3.7^{H}	3.7	3.6	3.6	3.2	L	L	L					
22								C	C	A	3.6	3.5	3.6	3.4	3.4	3.6	L	L	L					
23							L	L	L	$(3.1)^{J}$	C	3.8^{H}	3.5	3.6	3.3	3.5	L	L						
24								Q	L	L	3.5	3.5	3.4	3.6	3.6	3.3	3.4	3.6	Q					
25								L	L	L	3.5	$(3.8)^{C}$	$(3.6)^{C}$	L	3.5	L	L	L	Q					
26								C	C	C	C	$(3.6)^{C}$	3.8^{H}	$(3.3)^{C}$	C	L^{H}	A	A	A					
27								L	L^{H}	C	L	A	L	3.5	3.7	L	L	Q						
28								Q	L	L	3.9	$(3.7)^{C}$	3.4	3.5	L	L	3.9	L						
29								L^{K}	L^{H}_{K}	3.8^{F}_{K}	$^{K}(3.6)^{S}_{F}$	$^{K}(3.8)^{F}_{C}$	3.7^{K}	3.5^{K}	3.7^{K}	$(3.6)^{S}_{K}$	3.5^{K}	A^{K}	Q^{K}					
30								Q^{K}	L^{K}	3.8^{F}_{K}	3.6^{K}	3.9^{K}	$^{K}(3.8)^{H}_{C}$	3.6^{K}	3.8^{K}	3.6^{F}_{K}	S^{K}	L^{K}	Q^{K}					
31								L^{K}	3.5^{K}	3.5^{K}	3.9^{K}	3.9^{K}	3.8^{K}	3.6^{H}_{K}	3.8^{K}	3.6^{H}_{K}	3.3	L						
Median								3.5	3.6	3.8	3.8	3.8	3.7	3.6	3.7	3.6	3.5	3.4						
Count								8	14	20	21	24	27	27	27	26	14	12						

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1946 O - 702519

Form adopted June 1946

TABLE 55

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

E-M1500 (Characteristic), ______ (Unit), August (Month), 1948

Observed at Washington, D. C.

Lat 39.0°N, Long 77.5°W

75° W Mean Time

National Bureau of Standards (Institution)

Scaled by: E. J. W. J.J.S. J. M.C.

Calculated by: J. L. K., N. N. M.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1							A K	4.4 K	A K	A K	A K	4.5 K	A K	4.5 K	4.5 K	B K	4.5 K	(4.5) SK	A K	4.2 K				
2						4.7 K	4.1 K	A K	(4.7) AK	A K	A K	A K	A K	A K	4.5 K	4.5 K	4.6 K	4.3 K	4.5 K	4.1				
3							4.4	4.4	A	(4.5) A	A	A	A	(4.6) A	A	(4.6) A	A	A	A	A				
4							4.4	4.3	(4.4) A	4.4	4.7	A	4.4	(4.5) A	4.4	4.2	4.4	4.3	4.2	4.6				
5							4.4	4.4	4.5	4.7	4.6	4.6	A	A	4.7	4.2	4.3	4.5	4.4	4.7				
6							4.4	4.5	4.7	(4.6) A	A	4.6	A	(4.5) S	A	4.5	4.4	4.3	(4.4) A	A				
7							(4.3) AK	A K	A K	4.7 K	A K	(4.5) AK	4.5 K	4.5 K	A K	A K	4.5 K	K (4.1) AF	4.2 K	A K				
8							A K	4.4 K	4.2 K	4.5 K	4.2 K	(4.4) AK	(4.1) AK	(4.2) K	(4.4) SK	(4.6) SK	(4.5) AK	(4.5) AK	B K	B K				
9							4.4	A K	A K	A K	(4.5) AK	A K	B K	4.3 K	(4.5) CK	A K	4.2 K	4.3 K	4.2 K	4.2 K				
10							4.2 FK	(4.4) FK	4.3 K	4.3 K	C K	C K	(4.6) CK	4.6 K	4.6 K	4.3 K	4.3 K	4.3 K	4.5 K	A K				
11							4.7 HK	4.3 FK	4.5 K	4.7 K	A K	A K	C	C	C	C	(4.3) S	4.3	S	(4.7) C				
12							A HK	A HK	A K	(4.7) CK	A K	C K	B K	C K	B K	(4.5) SK	(4.4) SK	(4.3) AK	4.6 K	4.5 K				
13							4.2 K	A HK	(4.8) AK	4.8 K	A K	A K	A K	B K	B K	C K	4.3 K	4.5 K	4.5	A				
14							4.0	A	4.7	4.5	C	A	(4.4) C	4.6	4.2	4.1	4.3	4.3	4.3					
15							4.3 H	A	(4.8) A	A	4.4	(4.7) C	C	4.4	4.5	4.4	4.3	(4.6) A	A	A				
16							A	A	A	A	(4.7) A	C	A	C	C	(4.6) C	4.4	4.2 F	4.3	A				
17							A	A	4.7	4.7	A	A	4.4	A	4.5	4.5	4.4	4.2	4.6	A				
18							4.2	(4.4) A	A	C	C	(4.4) F	C	C	C	4.5	4.2	4.2	4.3					
19							4.4 H	A	4.5	4.7	C	C	C	C	(4.3) C	(4.5) C	4.3	(4.4) A	A					
20							4.0	(4.2) A	(4.8) A	4.7	C	C	C	C	(4.5) C	(4.3) C	4.3	C	4.2					
21							4.5	4.4	4.5	A	A	A	A	4.4	4.4	(4.3) C	4.5	4.2	4.8					
22							4.4	C	C	4.6	A	A	(4.3) C	C	4.2	4.2	4.3	4.4	4.9					
23							4.3	A	A	A	C	A	A	A	A	4.6	4.5 F	4.1 F	4.3	A				
24							4.3	4.5 F	4.3	4.3	(4.6) C	C	C	A	(4.6) C	4.5	4.5	4.3	4.6					
25							A	4.4	A	4.8	A	A	C	C	4.4	4.6	(4.5) F	4.4	(4.6) A					
26							4.3 H	C	C	C	C	C	C	C	C	(4.6) C	4.5	(4.8) A	A	A				
27							4.2 F	4.5	(4.5) A	4.8	C	A	C	C	4.5	4.2	(4.3) A	4.5	4.7					
28							4.2 H	4.1 H	4.7 H	A	4.5	C	4.6	C	4.2	4.3	4.4	4.3	(4.6) F					
29							4.4 K	4.5 K	(4.1) HK	4.5 FK	4.2 K	(4.2) CK	A K	4.4 K	4.5 K	4.4 K	(4.3) SK	4.6 K	4.7 K					
30							A K	A K	4.3 K	4.5 K	4.5 K	4.4 K	C K	4.4 K	4.5 K	4.3 K	4.5 K	A HK	(4.5) AK					
31							A K	4.1 K	4.1 FK	4.5 K	A K	A K	4.4 K	4.3 K	S K	4.3 K	4.7	4.4	4.5					
Median							4.3	4.4	4.5	4.6	4.5	4.5	4.4	4.4	4.5	4.4	4.4	4.3	4.5	4.5				
Count							23	17	20	21	10	9	9	14	20	26	30	28	24	7				

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ■

Table 56

Ionospheric Storminess at Washington, D. C.

August 1948

Day	Ionospheric character* 00-12 GCT	Ionospheric character* 12-24 GCT	Principal storms Beginning GCT	Principal storms End GCT	Geomagnetic character** 00-12 GCT	Geomagnetic character** 12-24 GCT
1	4	5	---/	----	3	3
2	4	4	---/	2400	3	3
3	2	2			3	2
4	1	2			3	3
5	1	2			2	1
6	1	3			2	2
7	2	4	1100	---/	3	3
8	4	6	----	---/	6	6
9	5	5	----	---/	5	4
10	4	5	----	---/	5	5
11	5	2	---/	1700	4	4
12	4	4	0700	---/	5	3
13	4	4	---/	2300	4	3
14	1	3			1	3
15	1	1			2	3
16	1	1			1	1
17	1	1			1	2
18	1	2			2	1
19	1	3			0	2
20	2	1			5	3
21	2	1			3	3
22	2	2			2	3
23	1	1			3	2
24	1	2			3	2
25	0	3			3	2
26	1	1			1	1
27	2	2			1	1
28	1	2			2	2
29	4	5	0300	---/	4	4
30	4	5	----	---/	5	2
31	4	5	---/	2100	3	3

*Ionosphere character figure (I-figure) for ionospheric storminess at Washington, D. C., during 12-hour period, on an arbitrary scale of 0 to 9, 9 representing the greatest disturbance.

**Average for 12 hours of Cheltenham, Maryland, geomagnetic K-figures on an arbitrary scale of 0 to 9, 9 representing the greatest disturbance.

***No readable record. Refer to table 45 for detailed explanation.

/Dashes indicate continuing storm.

Table 57

Sudden Ionosphere Disturbances Observed at Washington, D. C.

August 1948

Day	GCT Beginning	GCT End	Location of transmitters	Relative intensity at minimum*	Other phenomena
1	1612	1630	Ohio, D.C., England, New Brunswick	0.01	
1	1934	2020	Ohio, D.C., England, New Brunswick	0.02	
4	1716	1730	Ohio, D.C., England	0.5	
4	2011	2100	Ohio, D.C., England, New Brunswick	0.3	
5	1330	1420	Ohio, D.C., England, New Brunswick	0.2	
5	2011	2030	Ohio, D.C., England	0.0	Terr.mag.pulse** 2012-2025
6	1139	1205	Ohio, D.C.	0.3	
7	1348	1420	Ohio, D.C., England	0.03	Terr.mag.pulse** 1345-1352
16	1840	1905	Ohio, D.C.	0.2	
29	1452	1505	Ohio, D.C., England, New Brunswick	0.2	
31	1829	1845	Ohio, D.C., England, New Brunswick	0.0	

*Ratio of received field intensity during SID to average field intensity before and after, for station W8XAL, 6080 kilocycles, 600 kilometers distant.

**As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.

Table 58

Sudden Ionosphere Disturbances Reported by Engineer-in-Chief, Cable and Wireless, Ltd., as Observed in England

1948 Day	GCT Beginning	GCT End	Receiving station	Location of transmitters
August 5	0825	0900	Brentwood	Austria, Belgian Congo, Eritrea, Greece, India, Iran, Kenya, Madagascar, Palestine, Southern Rhodesia, Spain, Syria, U.S.S.R., Yugoslavia, Zanzibar
5	0825	0842	Somerton	Ceylon, China, Egypt, India
5	1335	1355	Brentwood	Afghanistan, Bahrein Is., Belgian Congo, Bulgaria, Canary Is., Chile, France, Greece, Iran, Kenya, Palestine, Portugal, Southern Rhodesia, Spain, Syria, Thailand, Turkey, U.S.S.R., Venezuela, Zanzibar
5	1335	1415	Somerton	Argentina, Brazil, Canada, Ceylon, Gold Coast, New York, Union of S. Africa
6	1125	1220	Brentwood	Austria, Bahrein Is., Belgian Congo, Chile, France, Greece, India, Iran, Kenya, Palestine, Panama, Portugal, Southern Rhodesia, Spain, Switzerland, Syria, Transjordan, Turkey, U.S.S.R., Yugoslavia, Zanzibar
6	1140	1215	Somerton	Argentina, Barbados, Brazil, Canada, Ceylon, China, Egypt, India, New York, Union of S. Africa
9	1027	1135	Brentwood	Austria, Belgian Congo, Chile, Greece, India, Iran, Kenya, Malta, Palestine, Panama, Portugal, Southern Rhodesia, Spain, Switzerland, Syria, Turkey, U.S.S.R., Yugoslavia, Zanzibar
9	1035	1125	Somerton	Australia, Brazil, Ceylon, India, New York, Union of S. Africa
17	0550	0615	Brentwood	Afghanistan, Bahrein Is., Bulgaria, Eritrea, Greece, India, Iran, Kenya, U.S.S.R., Zanzibar
17	0550	0735	Somerton	India
17	1105	1200	Brentwood	Austria, Bahrein Is., Belgian Congo, France, Greece, Iran, Kenya, Malta, Palestine, Panama, Portugal, Southern Rhodesia, Spain, Switzerland, Syria, Turkey, Yugoslavia, Zanzibar

Note: Observers are invited to send to the CRPL information on times of beginning and end of sudden ionosphere disturbances for publication as above. Address letters to the Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

Table 59

Provisional Radio Propagation Quality Figures
(Including Comparisons with CRPL Warnings and CRPL Probable Disturbed Period Forecasts)
July 1948

Day	North Atlantic: Quality figure 01-12 GCT	North Atlantic: Quality figure 13-24 GCT	North Atlantic: CRPL* Warning 01-12 GCT	North Atlantic: CRPL* Warning 13-24 GCT	North Atlantic: CRPL** Forecast of probable disturbed periods	North Atlantic: Geomagnetic K_{Ch} 01-12 GCT	North Atlantic: Geomagnetic K_{Ch} 13-24 GCT	North Pacific: Quality figure 01-12 GCT	North Pacific: Quality figure 13-24 GCT	North Pacific: CRPL* Warning 01-12 GCT	North Pacific: CRPL* Warning 13-24 GCT	North Pacific: CRPL** Forecast of probable disturbed periods	North Pacific: Geomagnetic K_{Ch} 01-12 GCT	North Pacific: Geomagnetic K_{Ch} 13-24 GCT
1	6	7				2	2	8	7				2	2
2	6	6				2	2	7	8				2	2
3	6	6				2	3	7	8				2	3
4	6	6				2	4	6	8				2	4
5	6	6				3	3	7	7				3	3
6	6	6				2	2	7	8				2	2
7	7	6				2	2	8	7				2	2
8	5	7				3	2	7	7				3	2
9	7	6				2	2	7	8				2	2
10	5	6				3	2	6	7				3	2
11	6	7			X	2	2	7	8			X	2	2
12	6	7			X	3	2	7	8			X	3	2
13	7	7				2	2	7	7				2	2
14	6	6				4	3	5	6				4	3
15	7	6				2	3	6	6				2	3
16	6	7			X	3	3	6	6			X	3	3
17	7	6				3	3	7	7				3	3
18	7	7				2	2	6	8				2	2
19	6	6				1	1	6	7				1	1
20	7	6				1	2	6	6				1	2
21	7	6				2	3	6	7				2	3
22	6	6				2	1	6	7				2	1
23	7	6				2	2	6	7				2	2
24	7	6				2	1	7	6				2	1
25	6	6				2	2	6	7				2	2
26	6	6			X	2	3	7	8			X	2	3
27	6	6			X	2	2	6	5			X	2	2
28	7	6				1	3	7	7				1	3
29	5	5		X		4	2	6	7		X		4	2
30	5	5	X	X		3	3	7	7	X	X		3	3
31	(4)	5	X	X	X	4	3	7	6	X	X	X	4	3
Score:														
H			1		1					0		0		
M			0		0					0		0		
G			28		25					28		25		
(S)			2		0					0		1		
S			0		5					3		5		

*Broadcast on WWV, Washington, D.C. Times of warnings recorded to nearest half day as broadcast.

**In addition to dates marked X, the following were designated as probable disturbed days on forecasts more than 8 days in advance of said dates: July 17 and 18.

Quality Figure Scale:
- 1 - Useless
- 2 - Very poor
- 3 - Poor
- 4 - Poor to fair
- 5 - Fair
- 6 - Fair to good
- 7 - Good
- 8 - Very good
- 9 - Excellent

Symbols:
- X Warning given or probable disturbed date
- H Quality 4 or worse on day or half day of warning
- M Quality 4 or worse on day or half day of no warning
- G Quality 5 or better on day of no warning
- (S) Quality 5 on day of warning
- S Quality 6 or better on day of warning
- ( ) Quality 4 or worse (disturbed)

Geomagnetic K_{Ch} on the standard scale of 0 to 9, 9 representing the greatest disturbance

Table 60

American and Zürich Provisional Relative Sunspot Numbers

August 1948

Date	R_A*	R_Z**	Date	R_A*	R_Z**
1	248	193	16	251	154
2	243	190	17	264	188
3	274	198	18	266	170
4	263	199	19	272	188
5	249	191	20	289	191
6	231	209	21	260	218
7	210	175	22	223	198
8	175	150	23	178	163
9	150	130	24	179	159
10	135	117	25	197	136
11	146	117	26	175	135
12	145	88	27	174	121
13	146	115	28	167	132
14	162	107	29	142	100
15	210	134	30	160	116
			31	170	136
			Mean:	205.0	155.4

*Combination of 43 observers; see page 8.

**Dependent on observations at Zürich Observatory and its stations at Locarno and Arosa.

Table 61a

Coronal observations at Climax, Colorado (5303A), east limb

Date	Degrees north of the solar equator																		0°	Degrees south of the solar equator																		P
GCT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	
1948																																						
Aug. 1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	12	10	-	-	6	7	8	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	∠10
2.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	14	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	∠10
3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	7	7	9	14	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	∠10
6.8	X	X	X	X	X	X	X	-	-	-	-	6	7	9	8	8	6	-	-	7	8	7	6	-	-	-	-	-	-	-	-	-	-	X	X	X	X	∠15
8.6	-	-	-	-	-	-	-	-	-	-	-	4	6	9	8	7	5	-	-	-	4	5	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	∠15
10.9	-	-	-	-	-	-	-	-	-	-	-	5	5	6	10	9	5	5	-	-	-	8	10	10	7	-	-	-	-	-	-	-	-	-	-	-	-	∠15
11.7	-	-	-	-	-	-	-	-	-	4	7	7	8	9	9	10	10	7	8	9	11	12	13	14	7	-	-	-	-	-	-	-	-	-	-	-	-	∠15
13.8	-	-	-	-	-	-	-	-	-	5	9	11	10	10	11	14	13	12	9	10	14	19	17	22	27	16	9	7	7	3	4	5	3	3	-	-	-	∠15
15.6	-	-	-	-	-	-	-	-	1	4	5	10	7	8	10	13	12	16	13	13	12	17	15	14	13	13	14	4	3	2	2	2	2	2	-	-	-	∠15
16.8	-	-	-	-	-	-	-	-	-	2	3	5	5	8	12	14	15	24	28	14	10	13	14	13	11	9	3	3	2	-	-	-	-	-	-	-	-	∠15
17.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	11	12	11	12	12	8	6	8	10	11	9	4	4	3	2	-	-	-	-	-	-	-	∠15
18.9	-	-	-	-	-	-	-	-	-	-	-	-	3	7	9	14	20	12	11	9	8	8	3	3	6	8	7	5	2	1	2	2	1	X	X	X	X	∠15
19.7	-	-	-	-	-	-	-	-	-	-	-	-	-	6	10	13	11	6	5	5	11	9	3	-	3	-	-	-	-	-	-	-	-	-	-	-	-	∠20
20.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	14	13	11	10	10	14	12	10	-	2	3	2	-	-	2	3	-	-	-	-	-	-	∠20
22.7	-	-	-	-	-	-	-	-	-	-	-	-	1	3	5	7	9	9	8	6	9	14	13	11	3	2	1	1	2	4	5	5	3	-	-	-	-	∠20
24.6	-	-	-	-	-	-	-	-	-	-	-	-	-	8	8	9	5	4	8	10	13	14	9	9	5	3	3	3	3	3	4	4	3	-	-	-	-	∠20
25.6	-	-	-	-	-	-	-	-	-	-	-	3	5	9	12	15	4	6	8	10	12	15	10	5	4	3	4	3	3	2	4	5	5	3	3	2	2	∠20
26.8	-	-	-	-	-	-	-	-	-	-	-	2	5	10	11	15	12	10	13	10	14	16	19	10	8	11	12	9	5	5	3	5	5	-	-	-	-	∠20
27.6	-	-	-	-	-	-	-	-	-	-	3	4	6	10	10	11	11	8	11	12	13	14	14	12	8	11	9	7	5	3	2	2	-	-	-	-	-	∠20
28.6	-	-	-	-	-	-	-	-	-	-	-	-	3	3	8	11	12	3	8	9	12	13	14	16	11	5	8	8	3	2	-	-	-	-	-	-	-	∠20
30.6	-	-	-	-	-	-	-	-	-	-	-	3	4	7	11	12	12	9	5	5	5	2	-	12	10	-	-	-	-	-	-	-	-	-	-	-	-	∠20
31.6	-	-	-	-	-	-	-	-	-	-	6	9	6	8	13	14	13	17	11	9	7	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	∠20

Table 62a

Coronal observations at Climax, Colorado (6374A), east limb

Date	Degrees north of the solar equator																		0°	Degrees south of the solar equator																		P
GCT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	
1948																																						
Aug. 1.7	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	4	5	1	1	2	3	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	∠10
2.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	7	10	1	1	1	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	∠10
3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	∠10
6.8	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	∠15
8.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	4	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	∠15
10.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	3	3	2	1	-	-	-	-	-	-	-	-	-	-	-	∠15
11.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4	1	-	-	-	1	2	3	2	3	-	-	-	-	-	-	-	-	-	-	-	-	∠15
13.8	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	9	9	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	∠15
15.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	∠15
16.8	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	1	1	1	1	1	1	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	∠15
17.6	-	-	-	-	-	-	-	-	-	-	-	-	1	2	3	5	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	∠15
18.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	4	5	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	∠15
19.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	5	3	1	1	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	∠20
20.7	-	-	-	-	-	-	-	-	-	-	1	1	2	2	5	10	3	3	1	1	2	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	∠20
22.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	∠20
24.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	∠20
25.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	∠20
26.8	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	∠20
27.6	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	1	1	1	1	2	5	4	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	∠20
28.6	-	-	-	-	-	-	-	-	-	1	1	2	-	1	4	5	3	1	-	1	4	4	4	2	1	-	-	-	-	-	-	-	-	-	-	-	-	∠20
30.6	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	1	1	-	-	1	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	∠20
31.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	1	2	5	1	1	1	1	-	-	-	-	-	-	-	-	-	∠20

Table 61b

Coronal observations at Climax, Colorado (5303A), west limb

Date GCT	Degrees south of the solar equator																		0°	Degrees north of the solar equator																		P
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	
1948																																						
Aug. 1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	5	5	4	7	8	10	10	11	10	4	4	4	-	-	-	-	-	-	-	-	-	-	/10
2.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	9	9	8	8	7	7	6	-	-	-	-	-	-	-	-	-	-	/10
3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	5	5	5	5	5	-	-	14	13	11	10	9	9	9	7	-	-	-	-	-	-	-	-	-	/10
6.8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	/15
8.6					4	11	12	9	7	4	5	9	10	7	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	/15
10.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	/15
11.7	-	-	-	-	-	-	-	-	-	-	6	9	10	5	-	7	11	11	9	3	5	9	7	3	-	-	-	-	-	-	-	-	-	-	-	-	-	/15
13.8	-	-	-	-	-	-	-	-	-	-	-	5	9	8	8	9	11	12	10	7	4	10	8	8	5	-	-	-	-	-	-	-	-	-	-	-	-	/15
15.6	-	-	1	2	3	3	2	-	-	-	4	5	4	5	13	12	13	13	7	3	2	15	18	10	5	4	2	1	-	-	-	-	-	-	-	-	-	/15
16.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	4	3	-	-	-	-	7	10	10	-	-	-	-	-	-	-	-	-	-	-	-	-	/15
17.6	-	-	-	-	-	-	-	-	-	-	-	3	3	4	4	5	5	6	8	9	10	11	13	17	10	8	4	2	-	-	-	-	-	-	-	-	-	/15
18.9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	/15
19.7	-	-	-	-	-	1	2	3	3	3	3	5	7	12	13	11	10	10	14	14	13	11	12	13	13	13	10	5	-	-	-	-	-	-	-	-	-	/20
20.7	-	-	-	-	-	-	2	3	3	4	7	7	7	14	15	16	10	9	9	10	10	10	11	11	11	10	5	3	-	-	-	-	-	-	-	-	-	/20
22.7	-	-	-	-	-	-	-	-	3	7	9	9	13	18	17	17	15	7	3	4	5	5	5	7	7	4	3	2	2	1	-	-	-	-	-	-	-	/20
24.6	-	-	-	-	-	-	-	3	4	3	5	7	7	15	17	15	15	15	13	11	10	11	14	12	9	6	3	2	1	1	-	-	-	-	-	-	-	/20
25.6	2	1	-	-	-	-	2	4	4	4	8	9	9	28	31	25	23	20	19	11	14	12	17	15	19	19	11	8	7	3	2	1	-	-	-	-	-	/20
26.8	-	-	-	-	-	-	3	5	5	4	10	11	13	29	31	25	25	19	18	20	23	25	27	25	17	16	12	13	10	6	3	-	-	-	-	-	-	/20
27.6	-	-	-	-	-	-	2	2	1	5	5	8	17	19	20	20	18	15	13	13	15	16	16	23	14	13	12	12	12	10	3	-	-	-	-	-	-	/20
28.6	-	-	-	-	-	-	-	2	3	3	2	10	12	14	15	18	23	18	18	19	20	20	20	21	22	8	10	10	9	8	3	1	-	-	-	-	-	/20
30.6	-	-	-	-	-	-	-	-	-	-	2	3	4	8	9	11	11	14	15	15	16	16	15	13	12	8	5	3	2	-	-	-	-	-	-	-	-	/20
31.6	-	-	-	-	-	-	-	-	-	-	4	5	6	8	8	9	10	11	10	13	14	13	14	12	11	10	6	3	-	-	-	-	-	-	-	-	-	/20

Table 62b

Coronal observations at Climax, Colorado (6374A), west limb

Date GCT	Degrees south of the solar equator																		0°	Degrees north of the solar equator																		P
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	
1948																																						
Aug. 1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	/10
2.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	/10
3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	/10
6.8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	/15
8.6	-	-	-	-	-	-	1	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	/15
10.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	/15
11.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	/15
13.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	8	5	5	5	-	-	-	-	-	-	-	-	-	-	-	-	/15
15.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	/15
16.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	/15
17.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	/15
18.9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	/15
19.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	/20
20.7	-	-	-	-	-	-	-	-	-	-	-	-	1	1	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	/20
22.7	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	5	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	/20
24.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	5	2	9	-	1	3	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	/20
25.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	4	3	1	5	8	1	1	-	-	-	-	-	-	-	-	-	-	-	-	/20
26.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	1	3	4	12	14	13	-	-	-	-	-	-	-	-	-	-	-	-	-	/20
27.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	9	10	5	1	-	-	-	-	-	-	-	-	-	-	-	-	/20
28.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	1	-	-	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-	/20
30.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	/20
31.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	2	2	3	3	2	2	1	1	1	-	-	-	-	-	-	-	-	-	/20

Table 63a

Coronal observations at Climax, Colorado (6704A), east limb

Date GCT	Degrees north of the solar equator																		0°	Degrees south of the solar equator																		P
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	
1948																																						
Aug. 1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+10
2.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+10
3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+10
6.8	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	+15
8.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+15
10.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+15
11.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+15
13.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+15
15.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+15
16.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	+15
17.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+15
18.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X	+15
19.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+20
20.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+20
22.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+20
24.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+20
25.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+20
26.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+20
27.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+20
28.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+20
30.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+20
31.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+20

Table 63b

Coronal observations at Climax, Colorado (6704A), west limb

Date GCT	Degrees south of the solar equator																		0°	Degrees north of the solar equator																		P
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	
1948																																						
Aug. 1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	⌿10
2.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	⌿10
3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	⌿10
6.8	X	X	X	X	.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	⌿15
8.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	⌿15
10.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	⌿15
11.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	⌿15
13.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	⌿15
15.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	⌿15
16.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	⌿15
17.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	⌿15
18.9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	⌿15
19.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	⌿20
20.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	⌿20
22.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	⌿20
24.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	⌿20
25.6	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	⌿20
26.8	-	-	-	1	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	⌿20
27.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	⌿20
28.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	⌿20
30.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	⌿20
31.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	⌿20

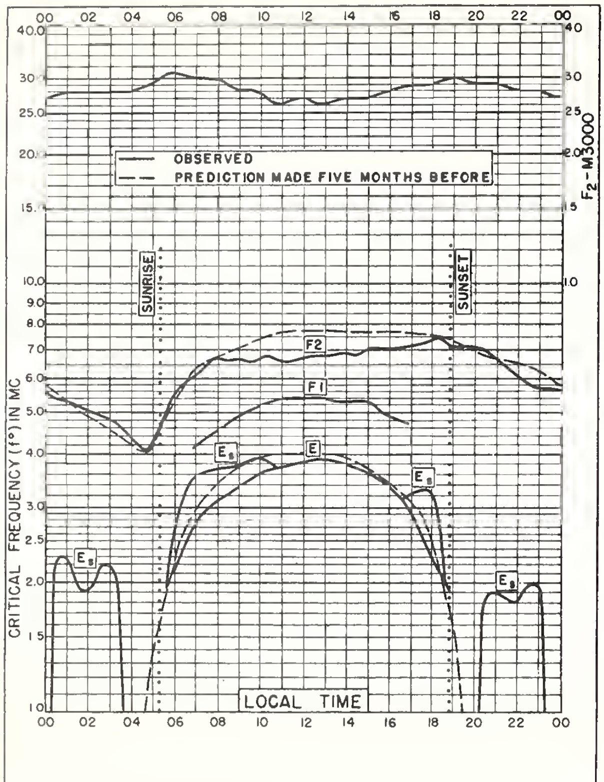

Fig. 1. WASHINGTON, D. C.
39.0°N, 77.5°W AUGUST 1948

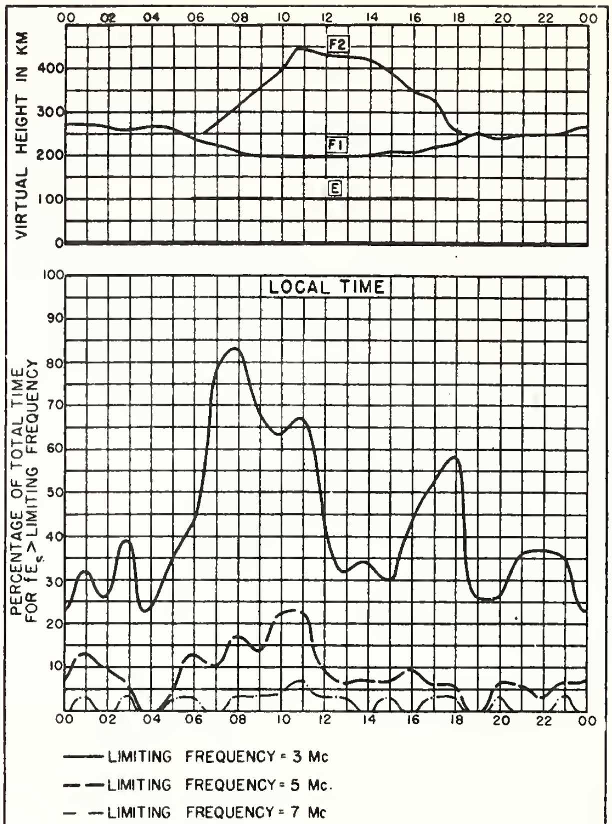

Fig. 2. WASHINGTON, D. C. AUGUST 1948

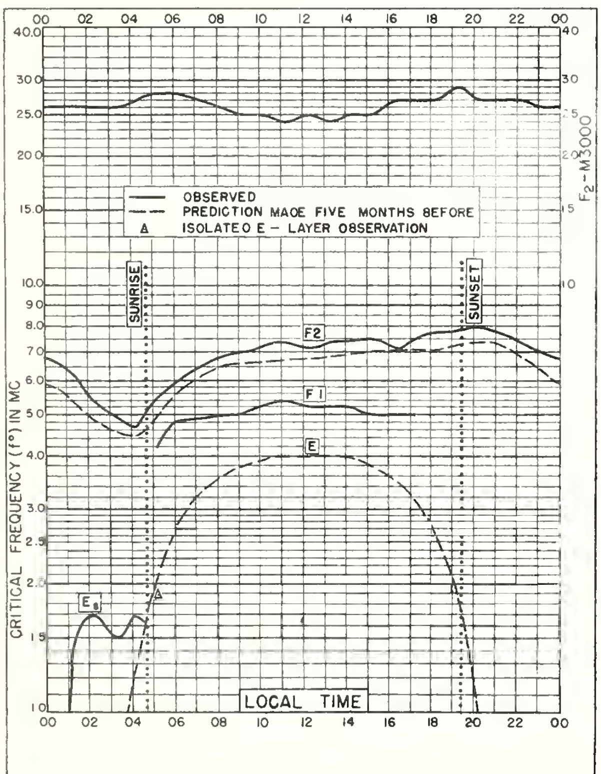

Fig. 3. BOSTON, MASSACHUSETTS
42.4°N, 71.2°W JULY 1948

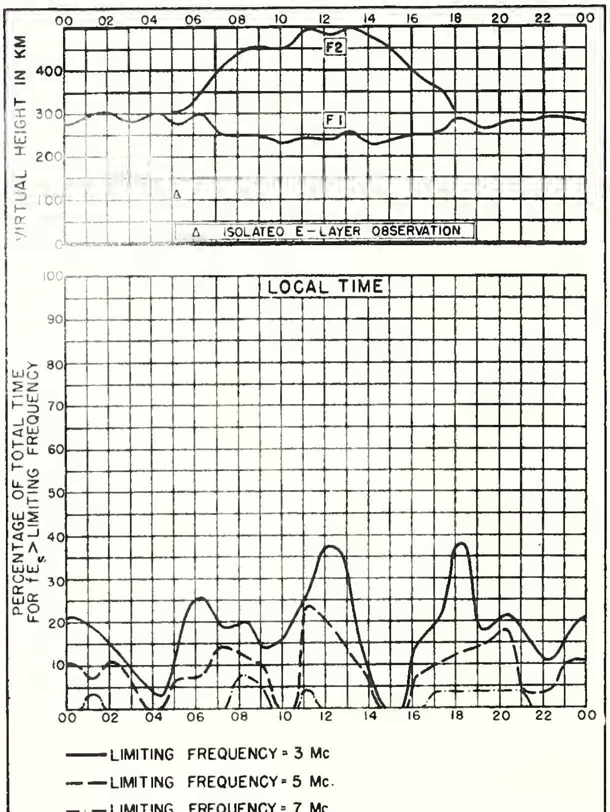

Fig. 4. BOSTON, MASSACHUSETTS JULY 1948

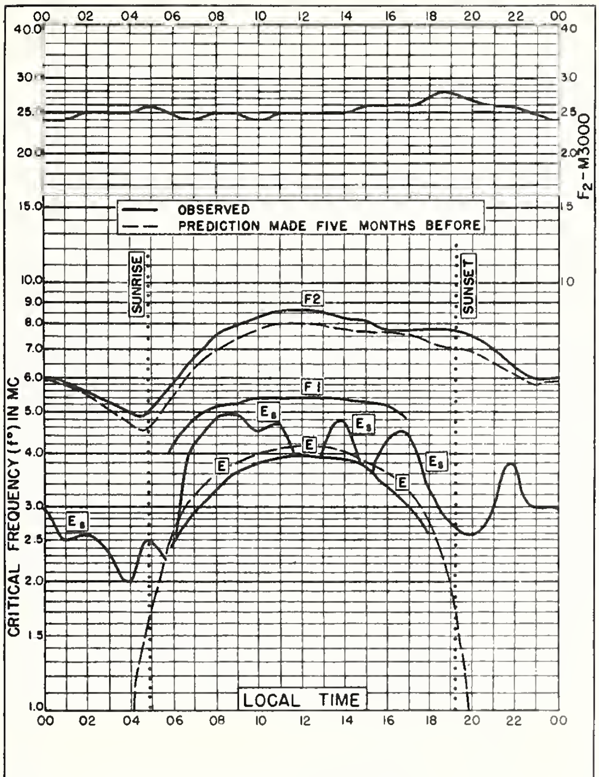

Fig. 5. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W JULY 1948

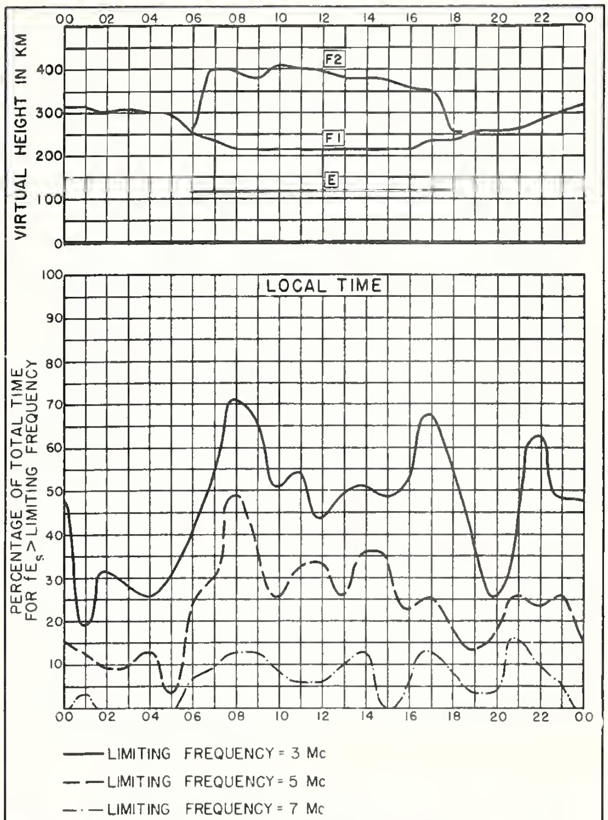

Fig. 6. SAN FRANCISCO, CALIFORNIA JULY 1948

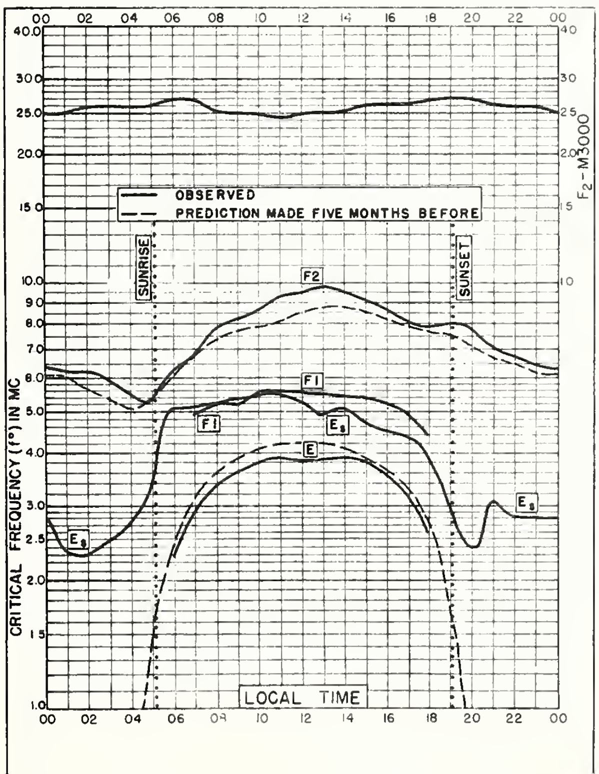

Fig. 7 WHITE SANDS, NEW MEXICO
32.3°N, 106.5°W JULY 1948

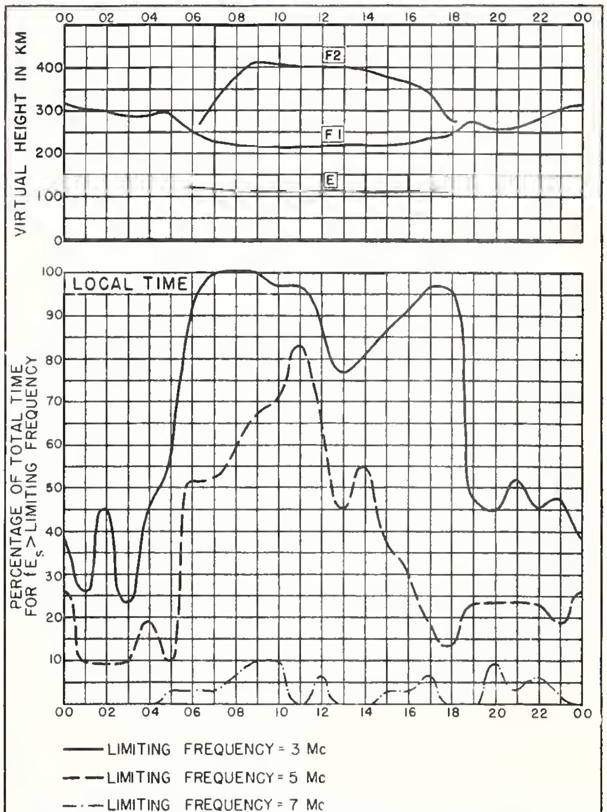

Fig. 8. WHITE SANDS, NEW MEXICO JULY 1948

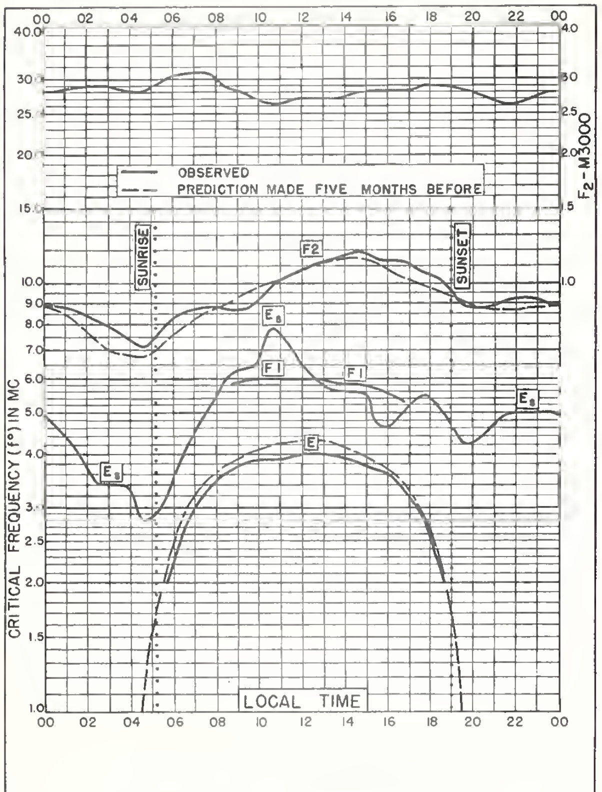

Fig. 9. WUCHANG, CHINA
30.6°N, 114.4°E JULY 1948

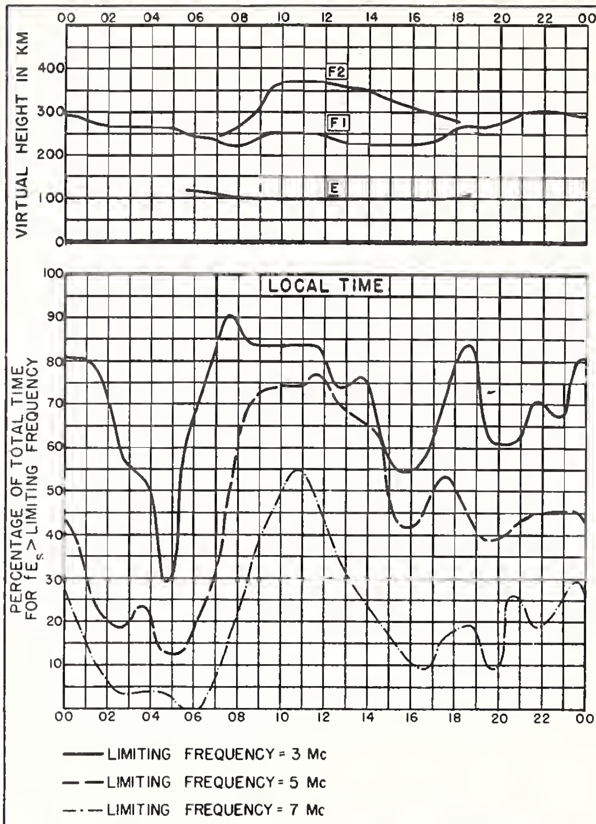

Fig. 10. WUCHANG, CHINA JULY 1948

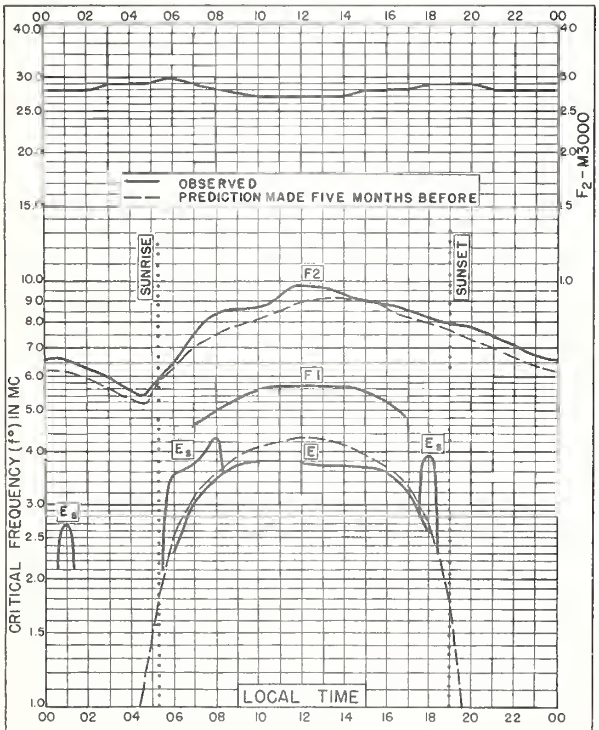

Fig. 11. BATON ROUGE, LOUISIANA
30.5°N, 91.2°W JULY 1948

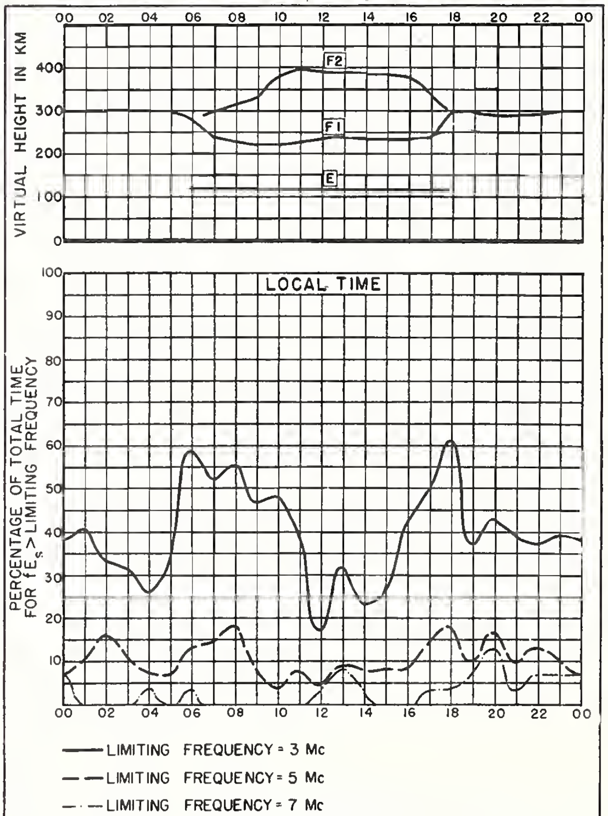

Fig. 12. BATON ROUGE, LOUISIANA JULY 1948

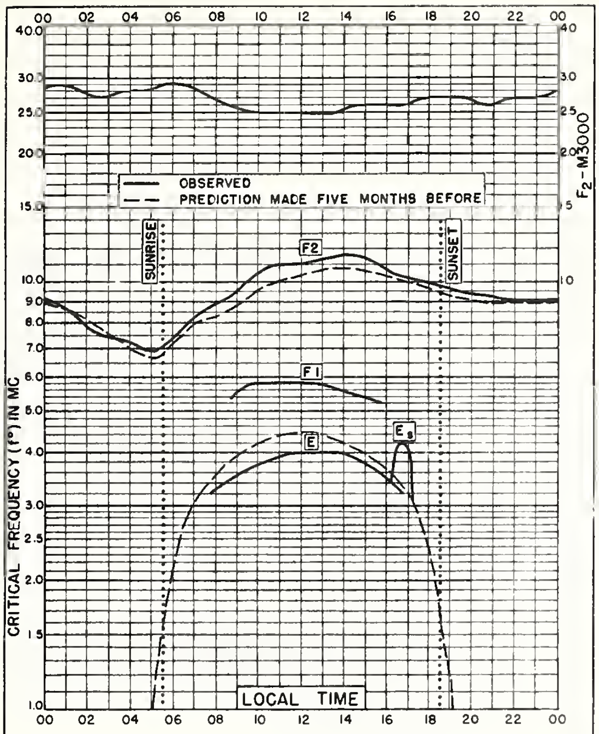

Fig. 13. SAN JUAN, PUERTO RICO
18.4°N, 66.1°W JULY 1948

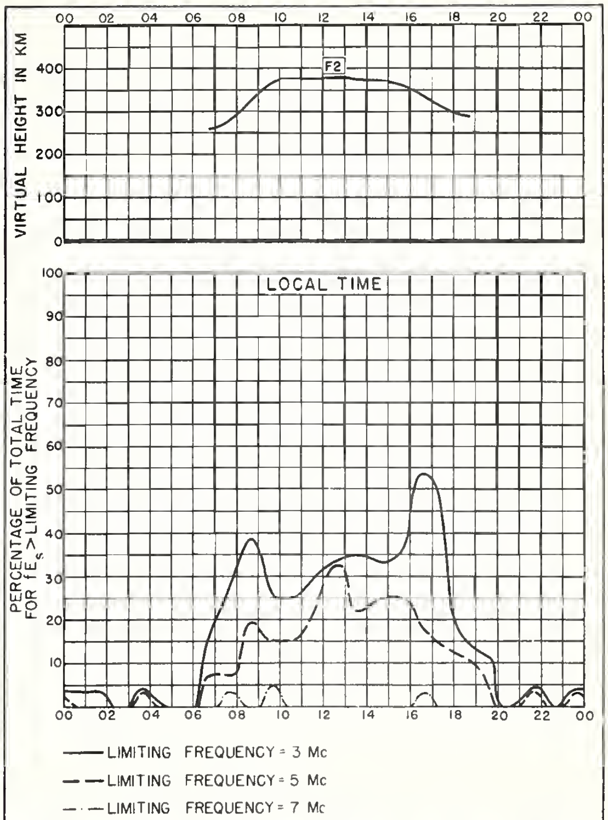

Fig. 14. SAN JUAN, PUERTO RICO JULY 1948

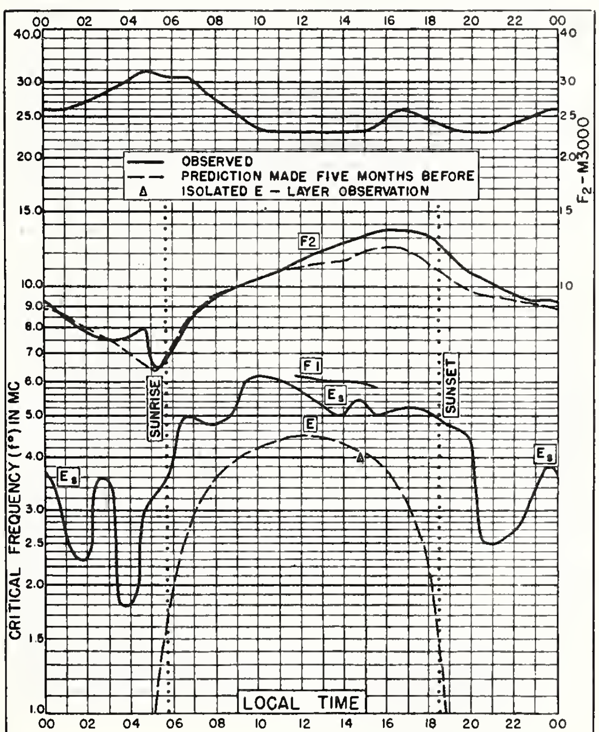

Fig. 15. GUAM I.
13.6°N, 144.9°E JULY 1948

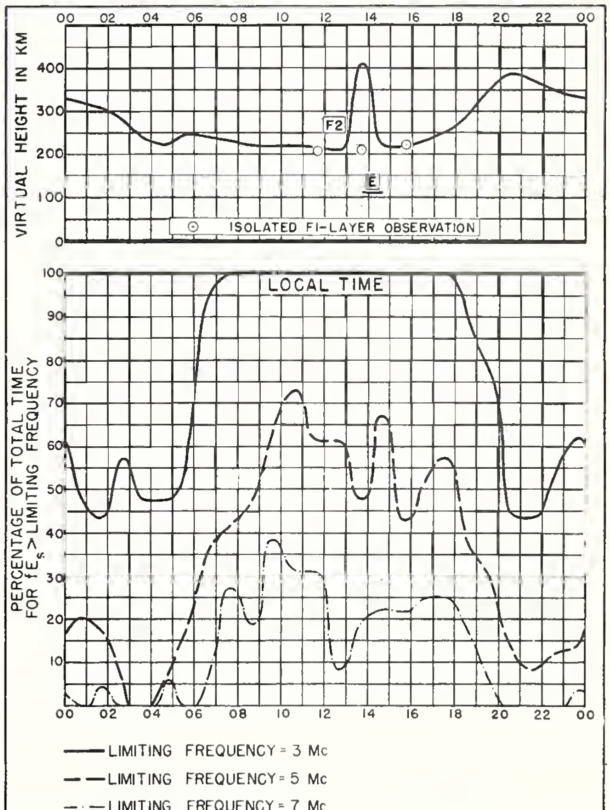

Fig. 16. GUAM I. JULY 1948

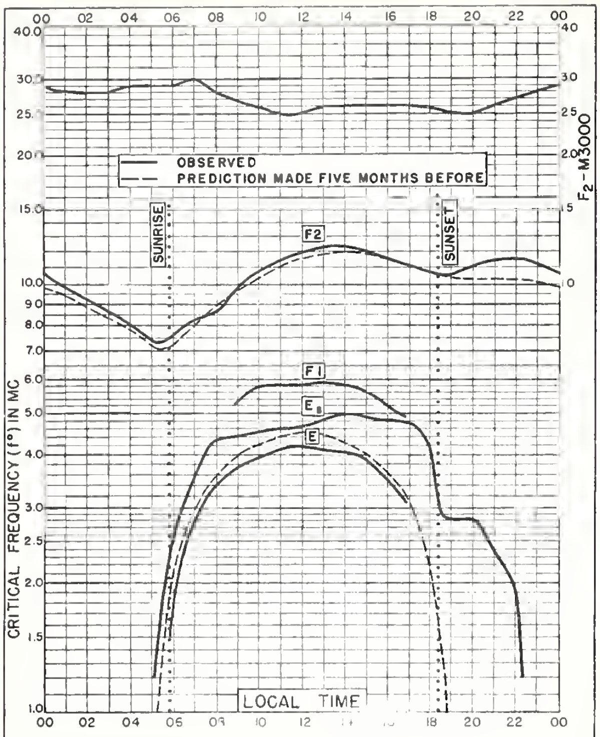

Fig. 17. TRINIDAD, BRIT. WEST INDIES
10.6°N, 61.2°W JULY 1948

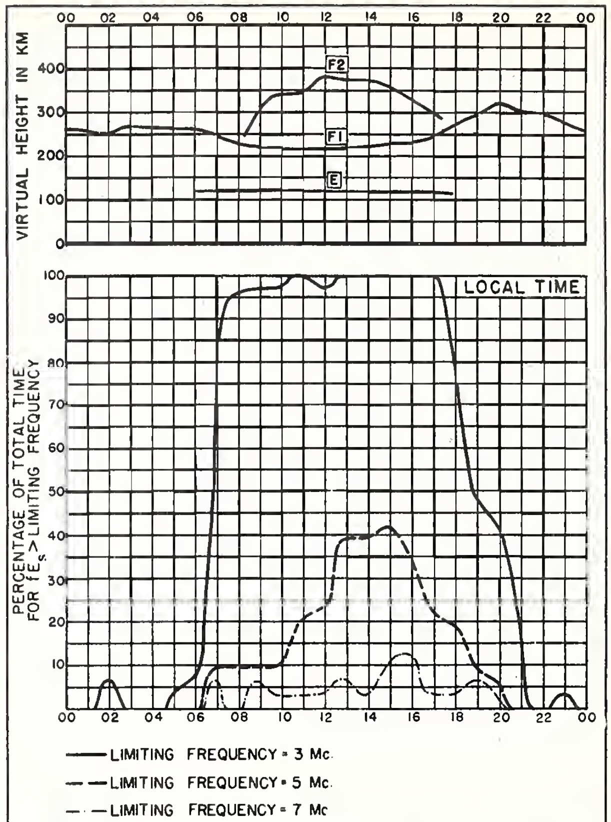

Fig. 18. TRINIDAD, BRIT. WEST INDIES JULY 1948

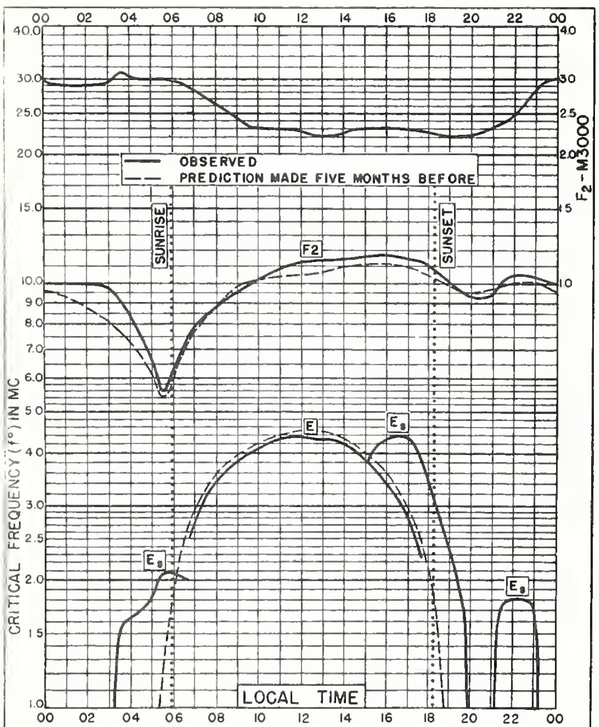

Fig. 19. PALMYRA I.
5.9°N, 162.1°W JULY 1948

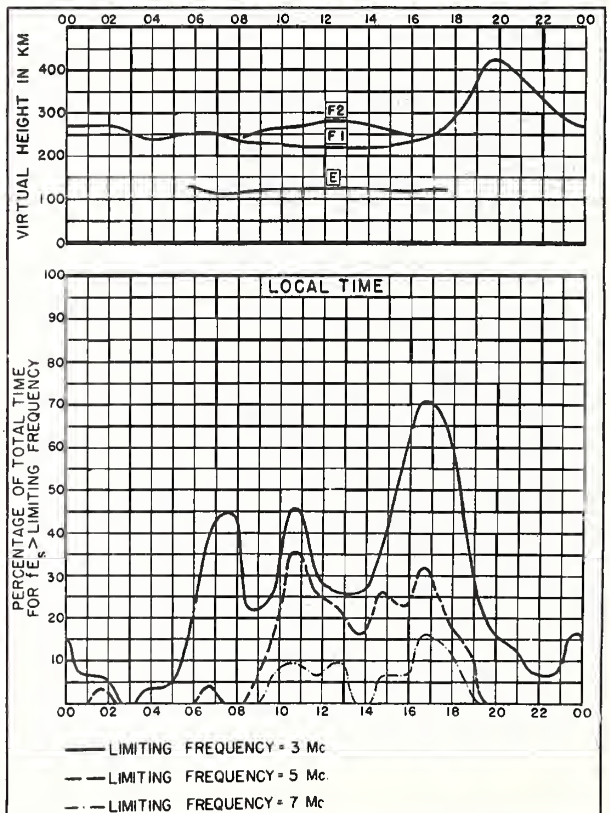

Fig. 20. PALMYRA I. JULY 1948

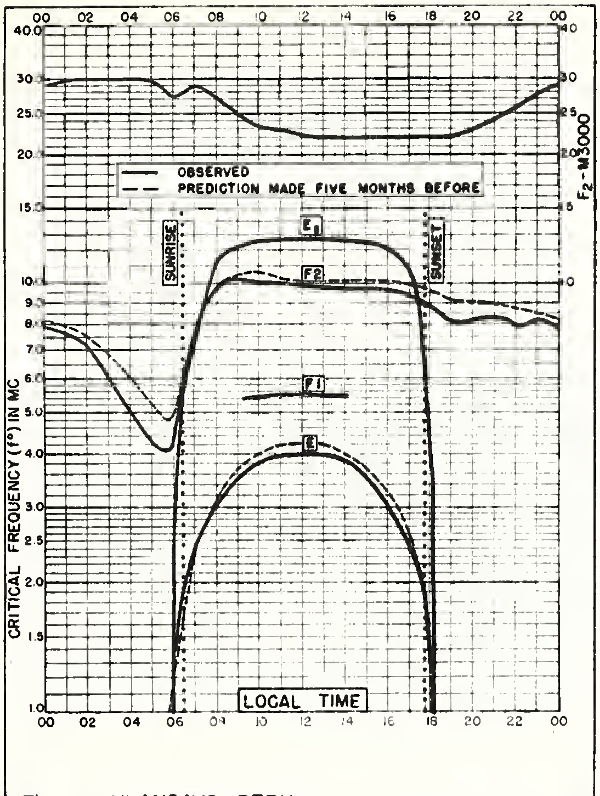

Fig. 21. HUANCAYO, PERU
12.0° S, 75.3°W JULY 1948

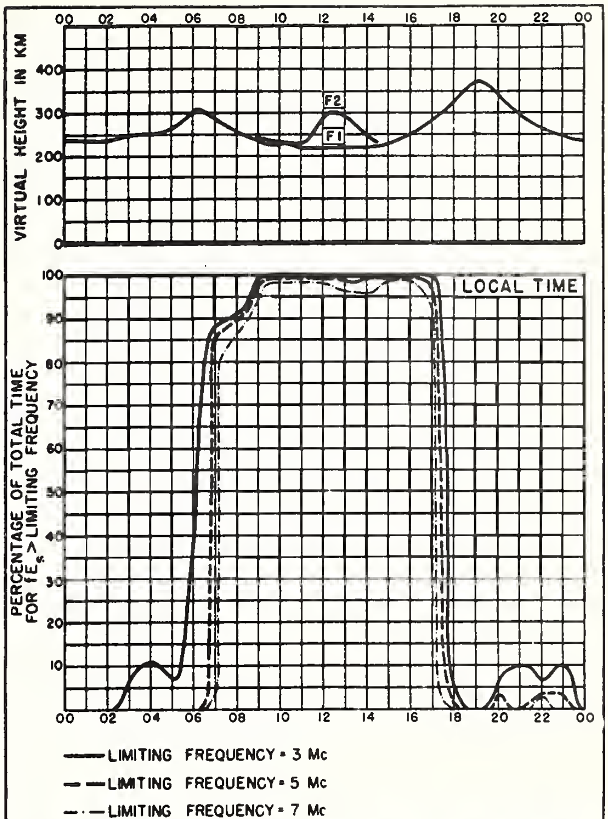

Fig. 22. HUANCAYO, PERU JULY 1948

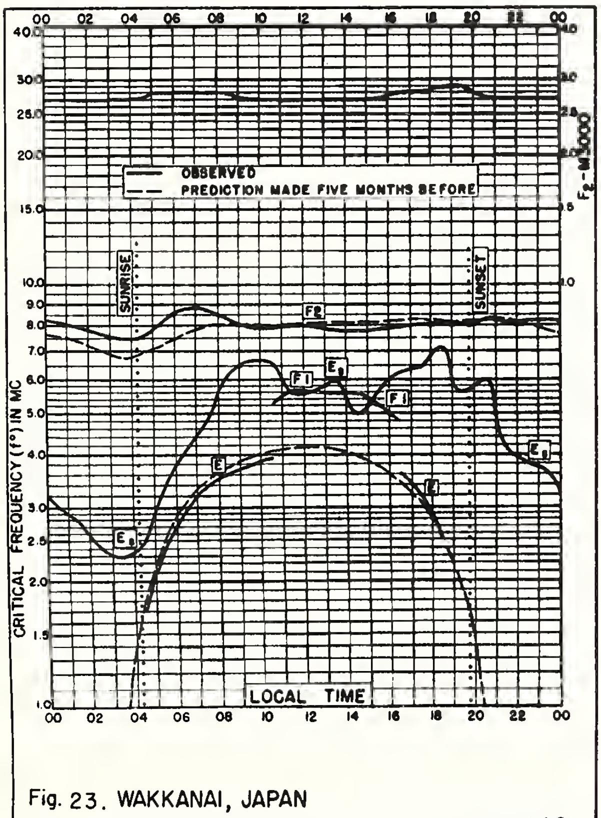

Fig. 23. WAKKANAI, JAPAN
45.4°N, 141.7°E JUNE 1948

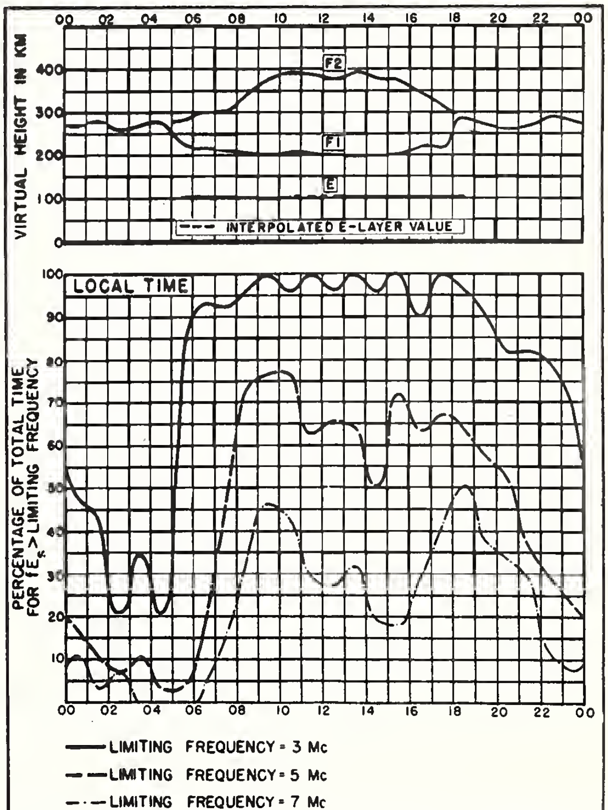

Fig. 24. WAKKANAI, JAPAN JUNE 1948

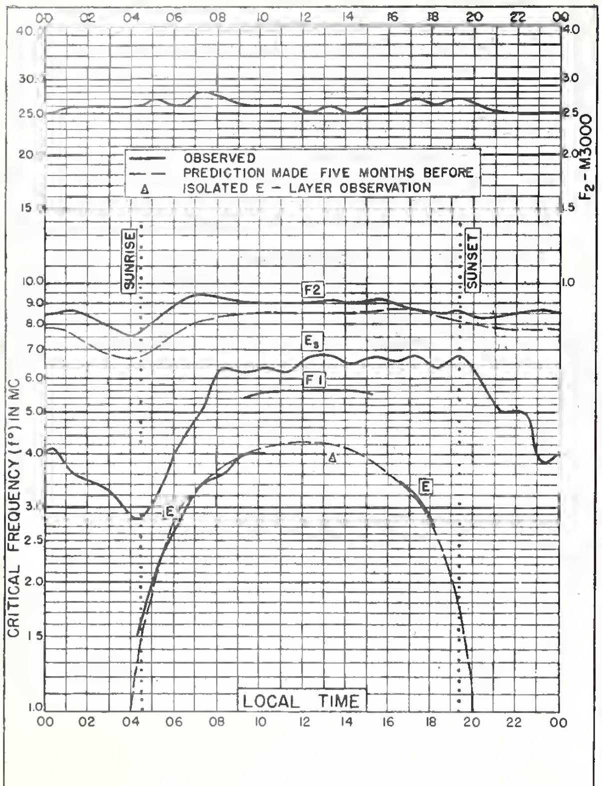

Fig. 25. FUKAURA, JAPAN
40.6°N, 139.9°E JUNE 1948

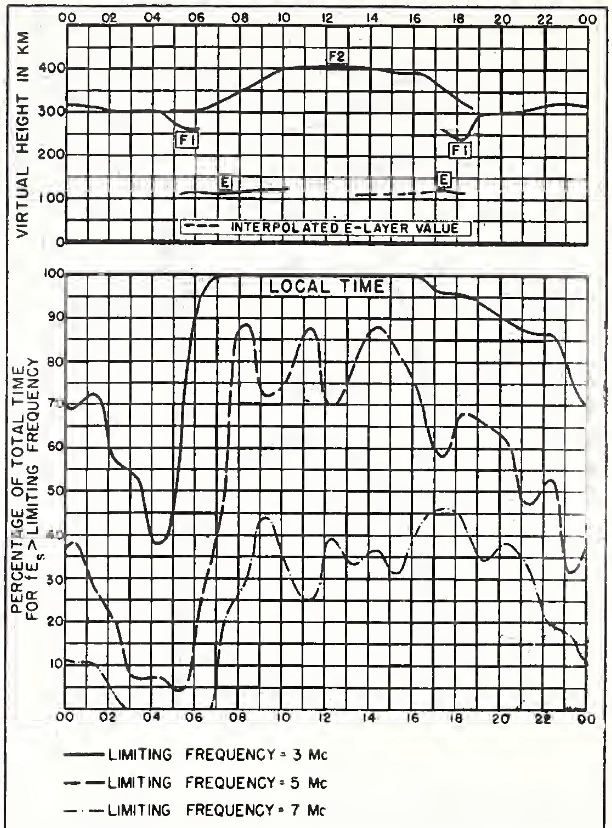

Fig. 26. FUKAURA, JAPAN JUNE 1948

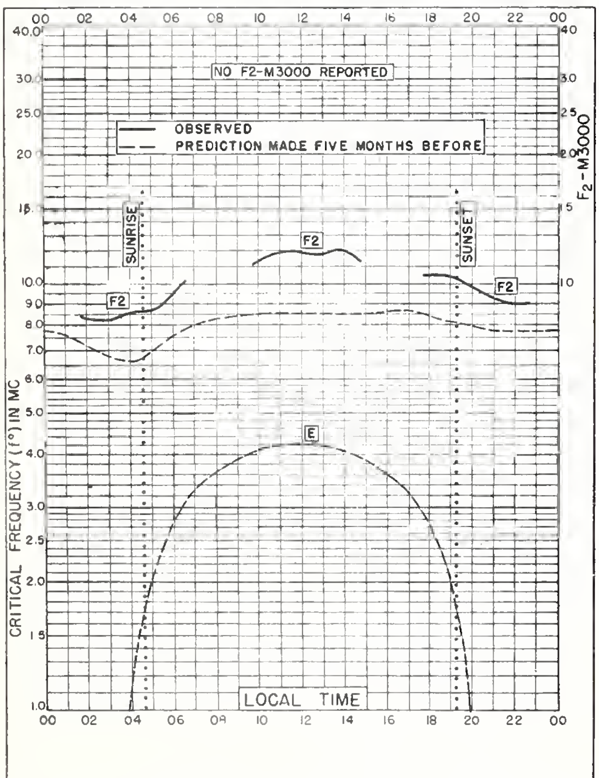

Fig. 27. PEIPING, CHINA
39.9°N, 116.4°E JUNE 1948

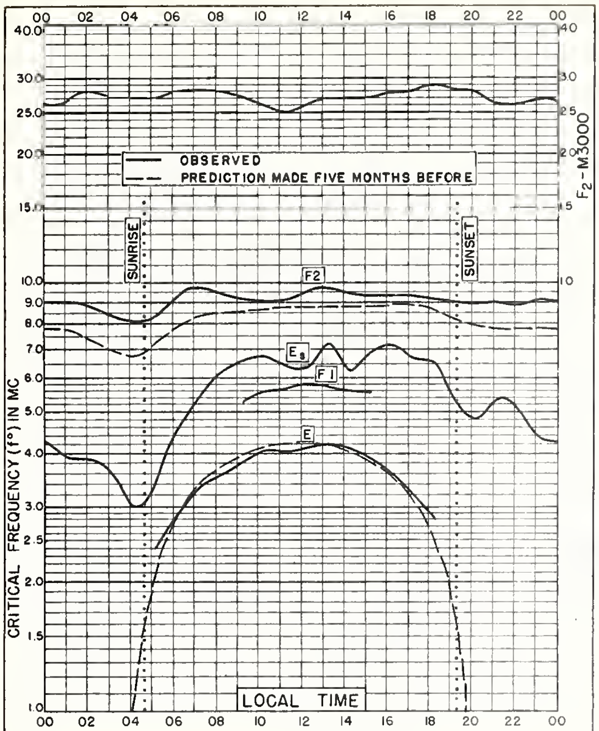

Fig. 28. SHIBATA, JAPAN
37.9°N, 139.3°E JUNE 1948

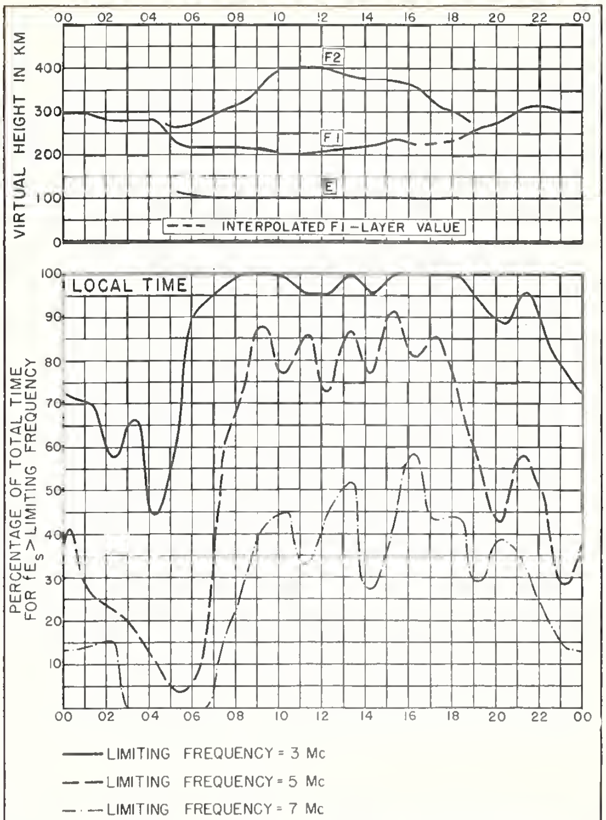

Fig. 29. SHIBATA, JAPAN JUNE 1948

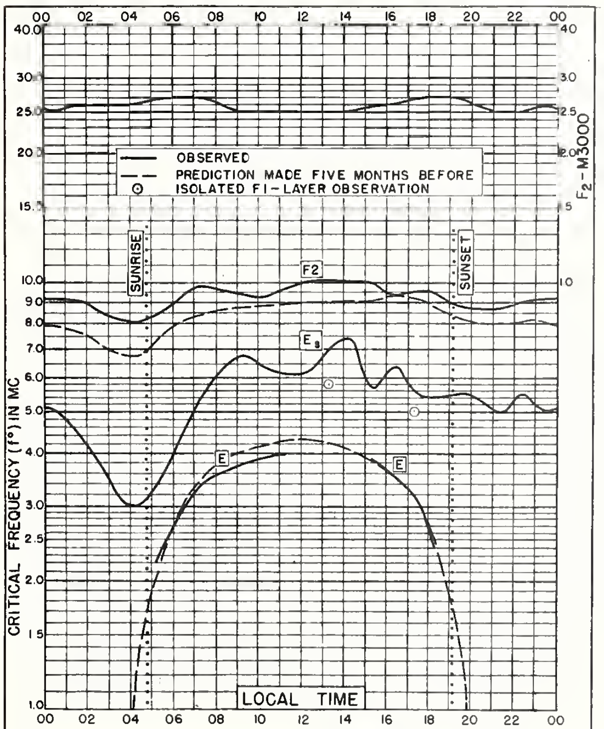

Fig. 30. TOKYO, JAPAN
35.7°N, 139.5°E JUNE 1948

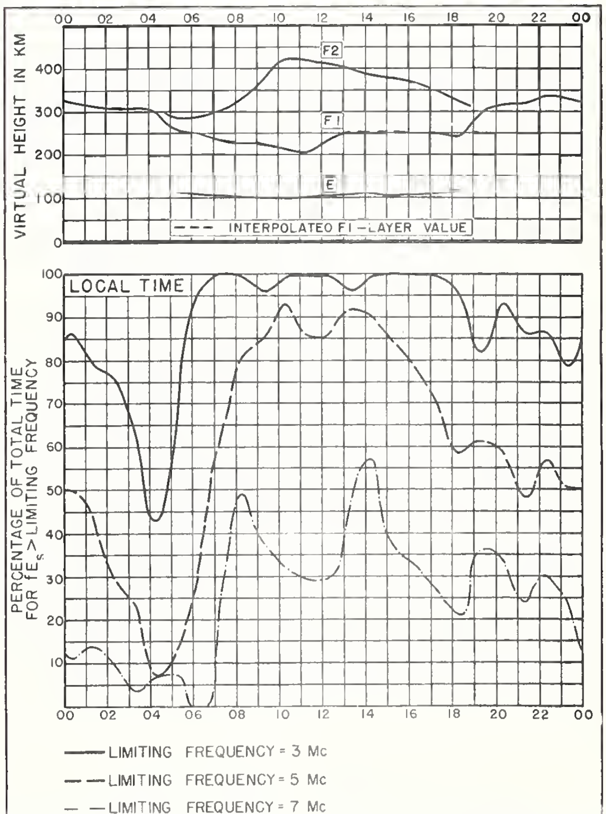

Fig. 31. TOKYO, JAPAN JUNE 1948

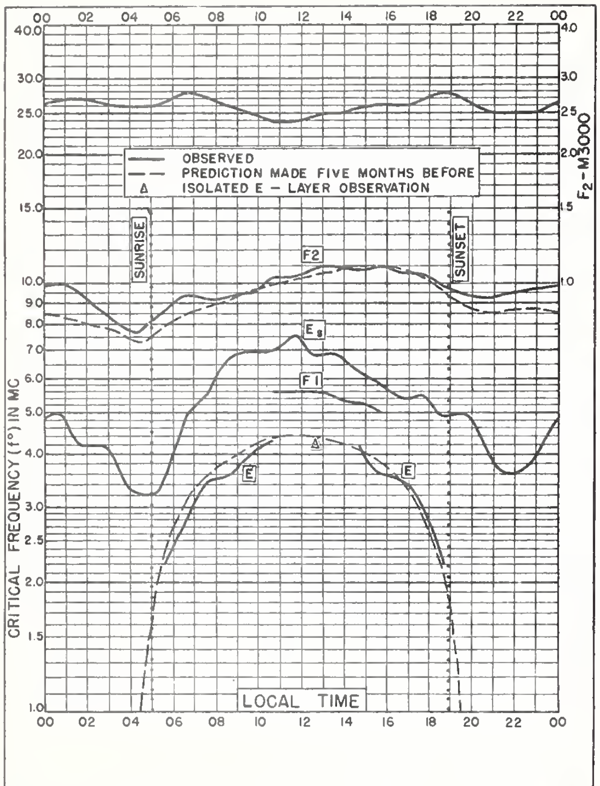

Fig. 32. YAMAKAWA, JAPAN
31.2°N, 130.6°E JUNE 1948

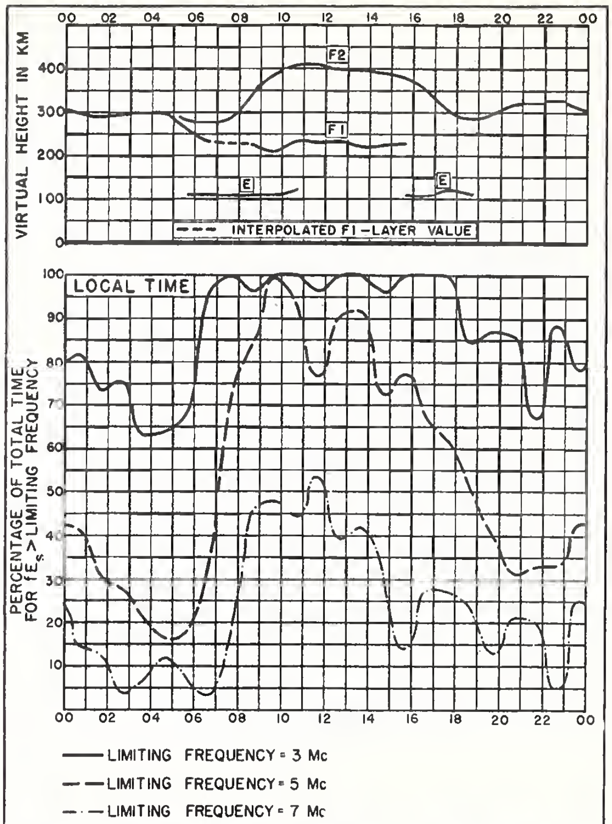

Fig. 33. YAMAKAWA, JAPAN JUNE 1948

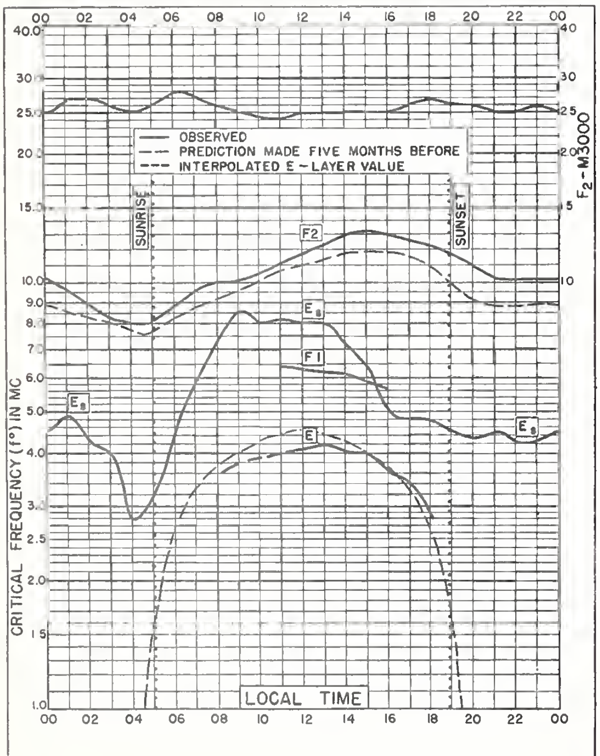

Fig. 34. CHUNGKING, CHINA
29.4°N, 106.8°E JUNE 1948

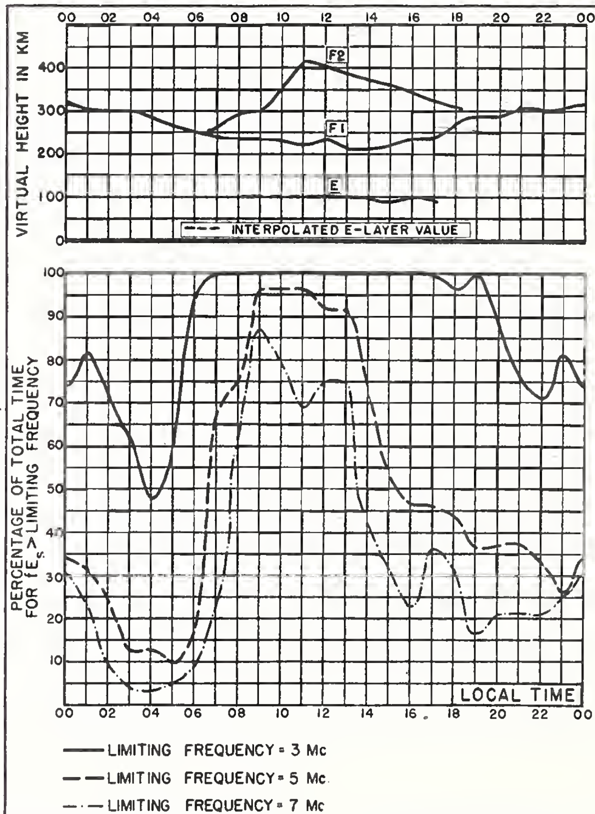

Fig. 35. CHUNGKING, CHINA JUNE 1948

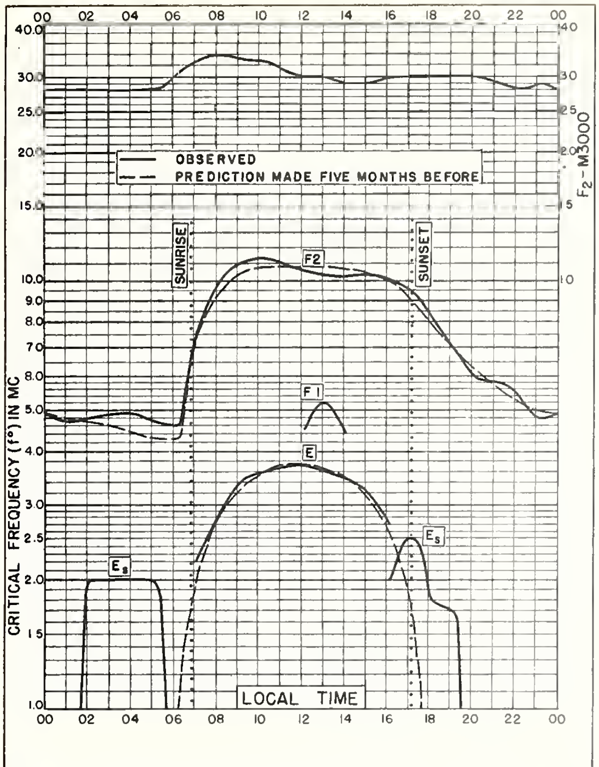

Fig. 36. BRISBANE, AUSTRALIA
27.5°S, 153.0°E JUNE 1948

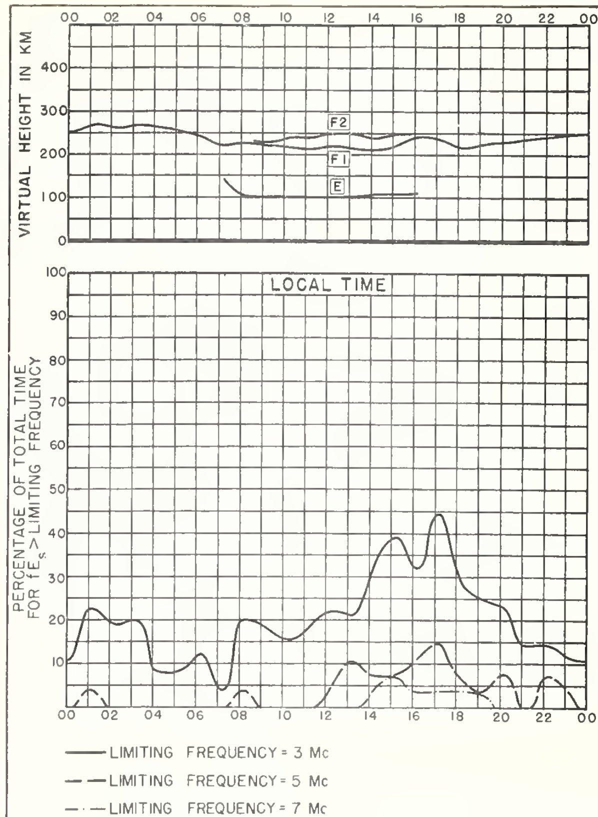

Fig. 37. BRISBANE, AUSTRALIA JUNE 1948

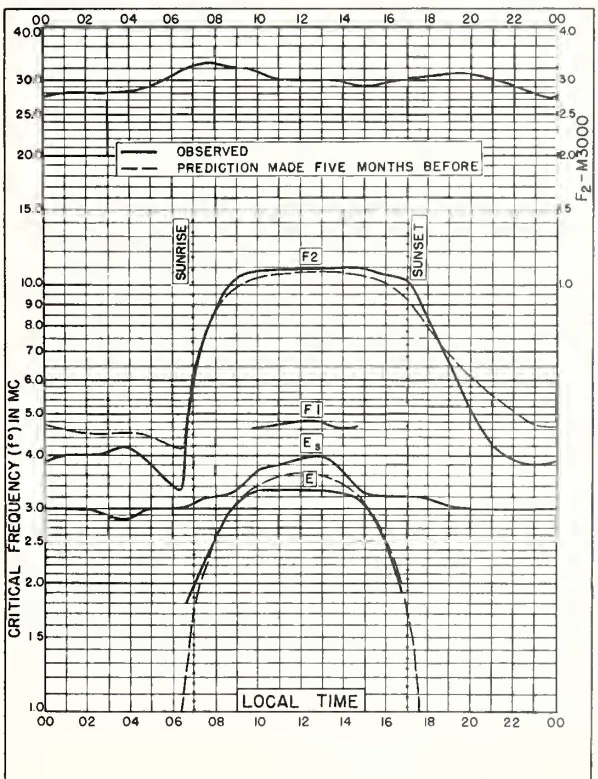

Fig. 38. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E JUNE 1948

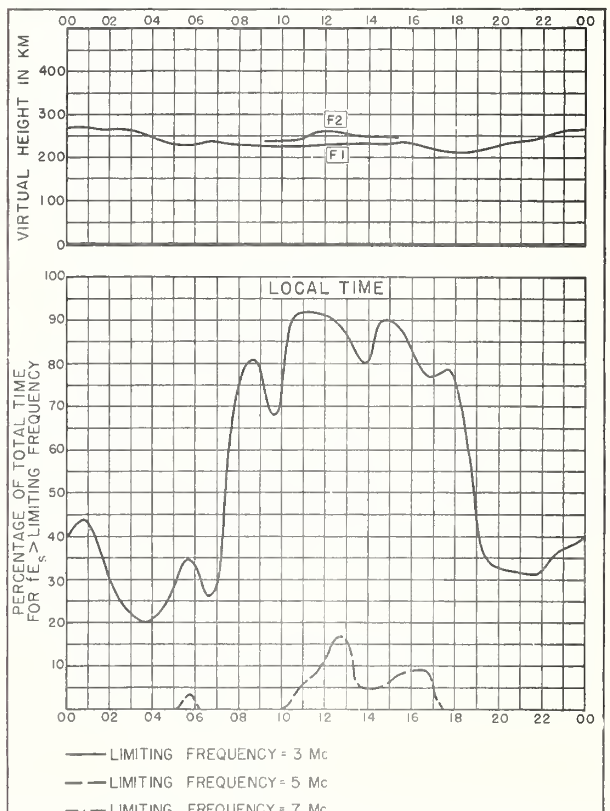

Fig. 39. WATHEROO, W. AUSTRALIA JUNE 1948

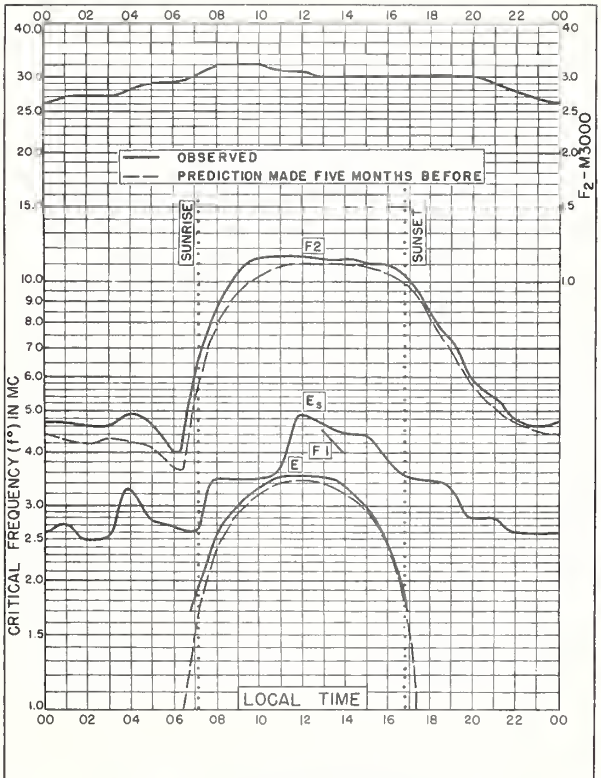

Fig. 40. CANBERRA, AUSTRALIA
35.3°S, 149.0°E JUNE 1948

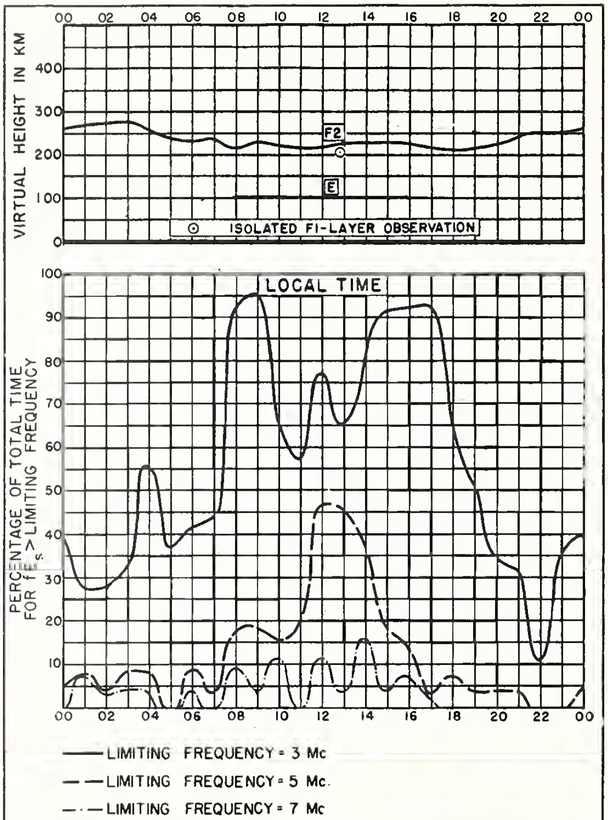

Fig. 41. CANBERRA, AUSTRALIA JUNE 1948

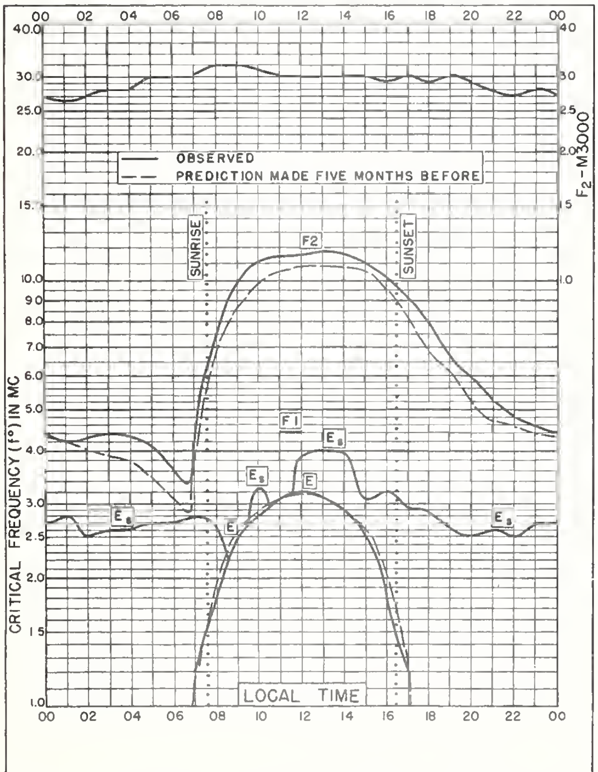

Fig. 42. CHRISTCHURCH, N.Z.
43.5°S, 172.7°E JUNE 1948

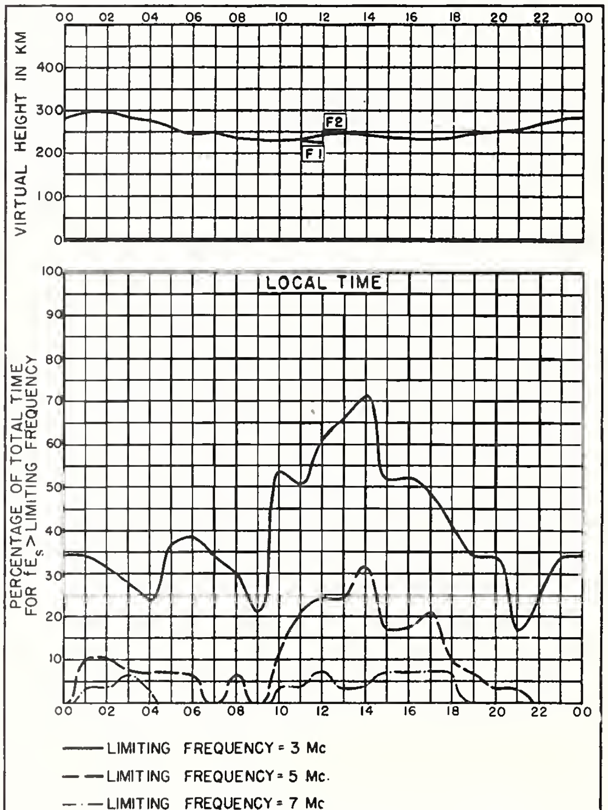

Fig. 43. CHRISTCHURCH, N.Z. JUNE 1948

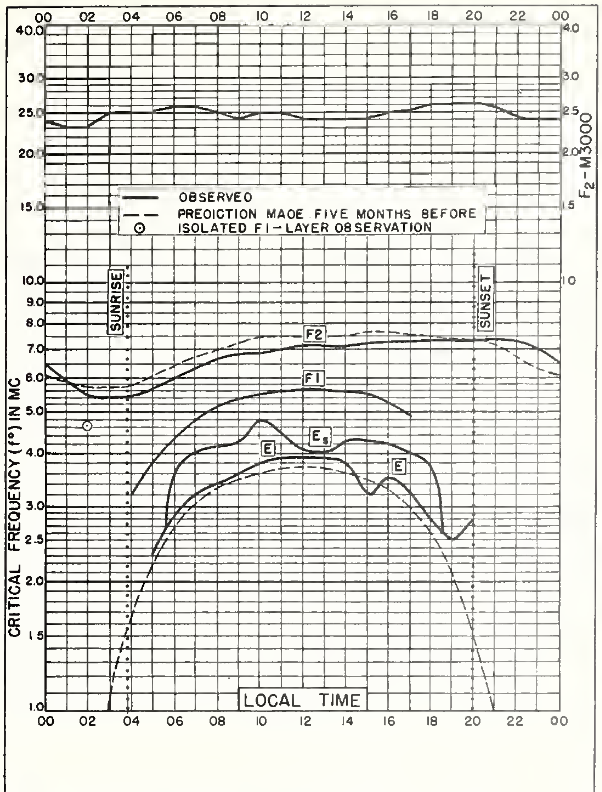

Fig. 44. FRASERBURGH, SCOTLAND
57. 6°N, 2. 1°W MAY 1948

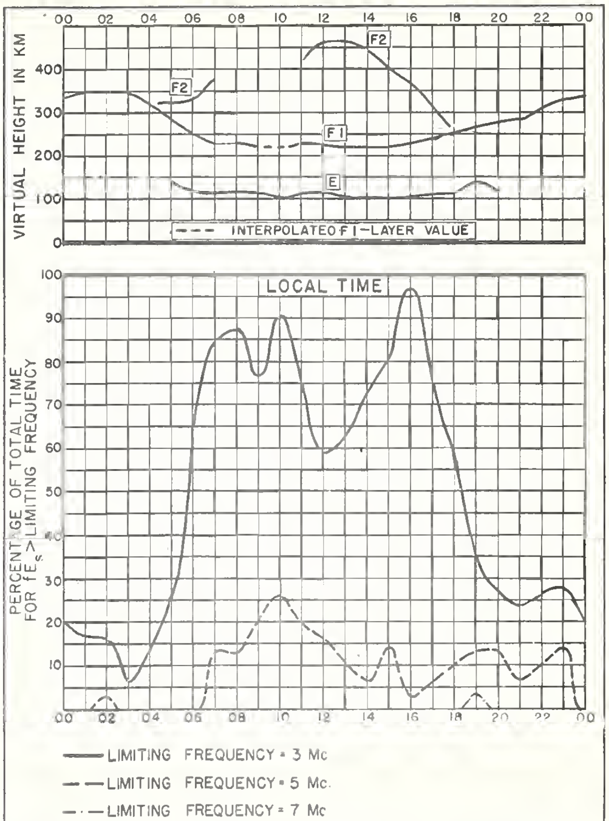

Fig. 45. FRASERBURGH, SCOTLAND MAY 1948

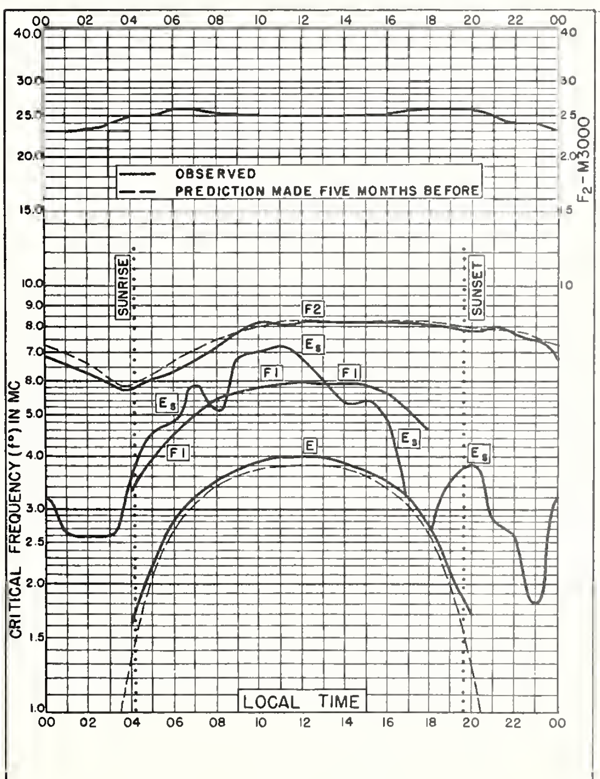

Fig. 46. SLOUGH, ENGLAND
51. 5°N, 0. 6°W MAY 1948

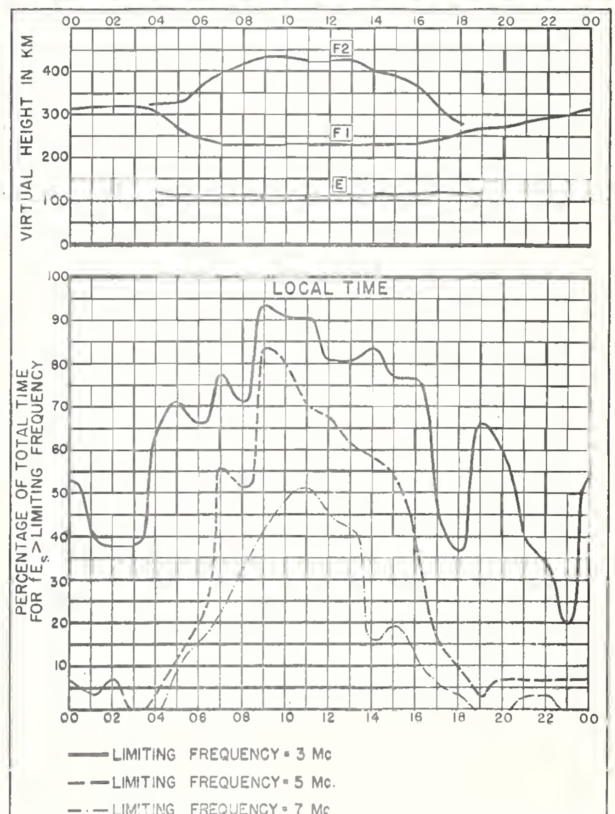

Fig. 47. SLOUGH, ENGLAND MAY 1948

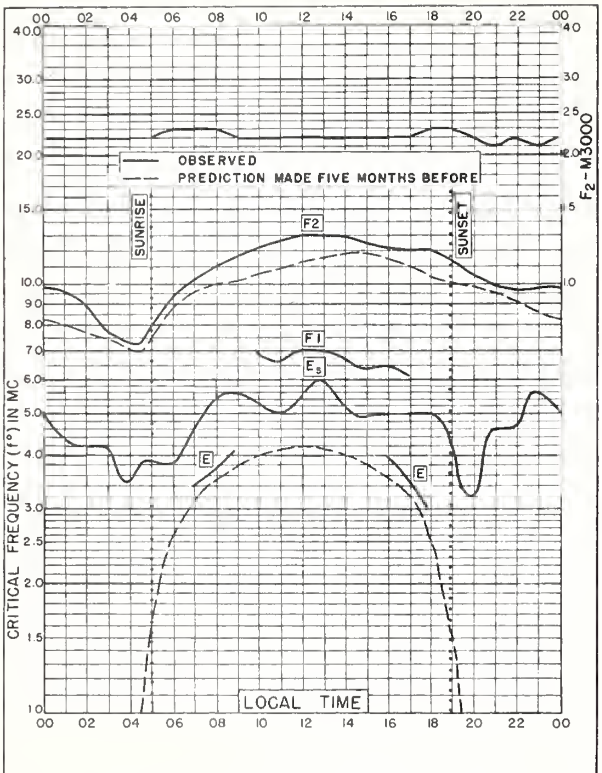

Fig. 48. LANCHOW, CHINA
36.1°N, 103.8°E MAY 1948

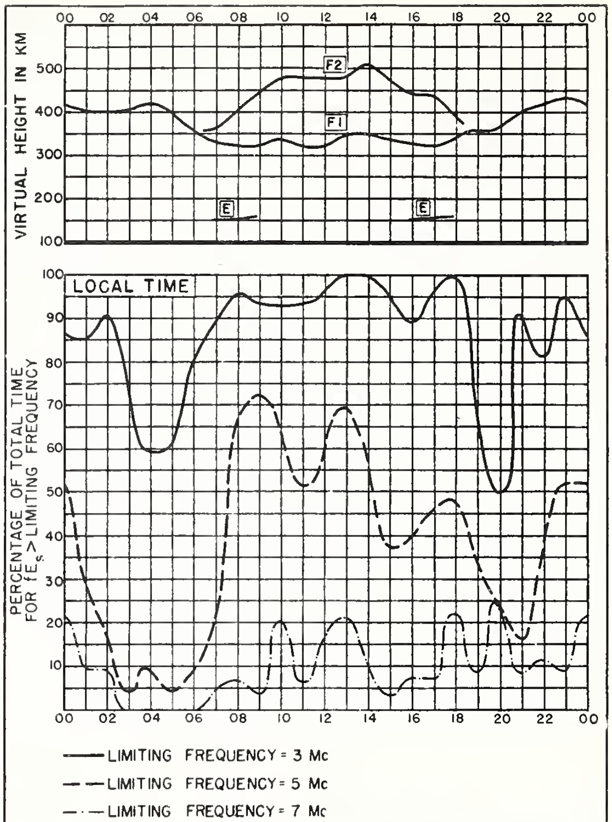

Fig. 49. LANCHOW, CHINA MAY 1948

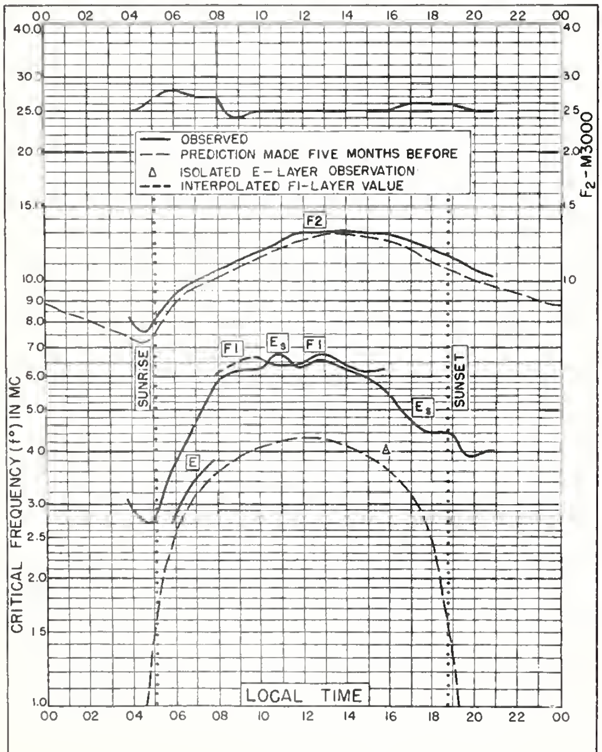

Fig. 50. NANKING, CHINA
32.1°N, 119.0°E MAY 1948

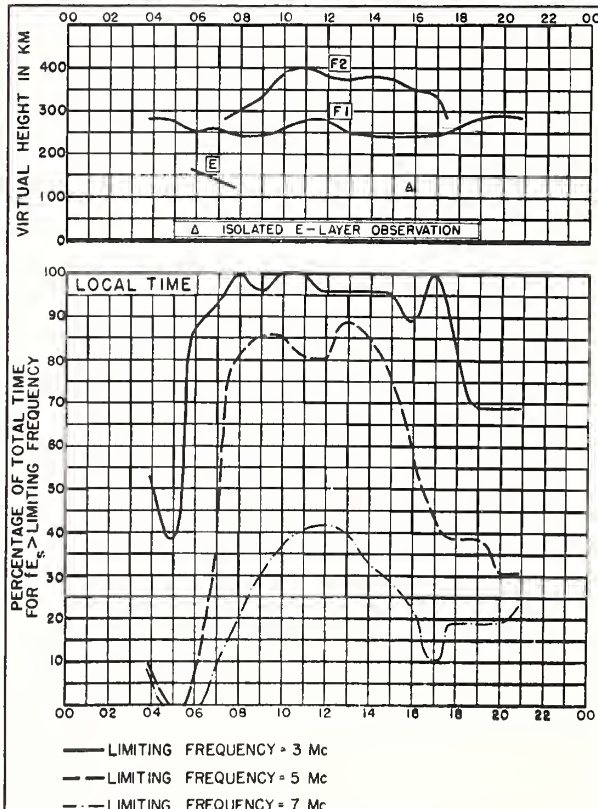

Fig. 51. NANKING, CHINA MAY 1948

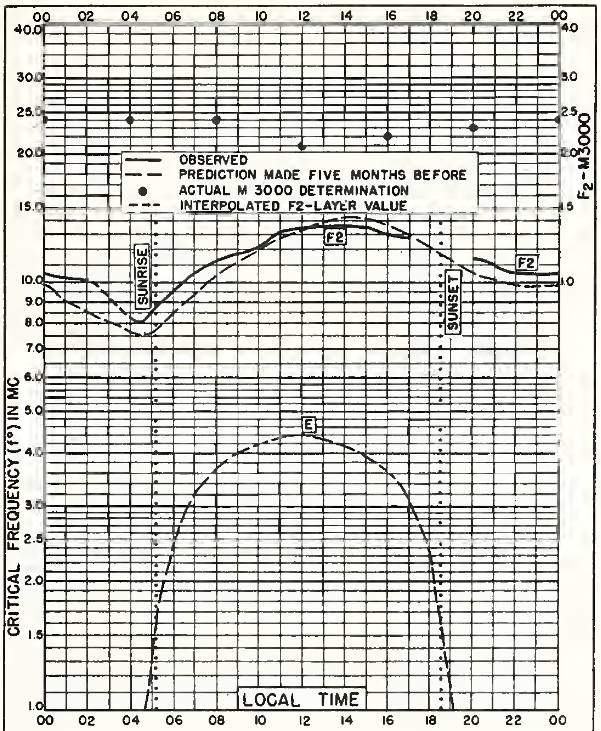

Fig. 52. DELHI, INDIA
28.6°N, 77.1°E MAY 1948

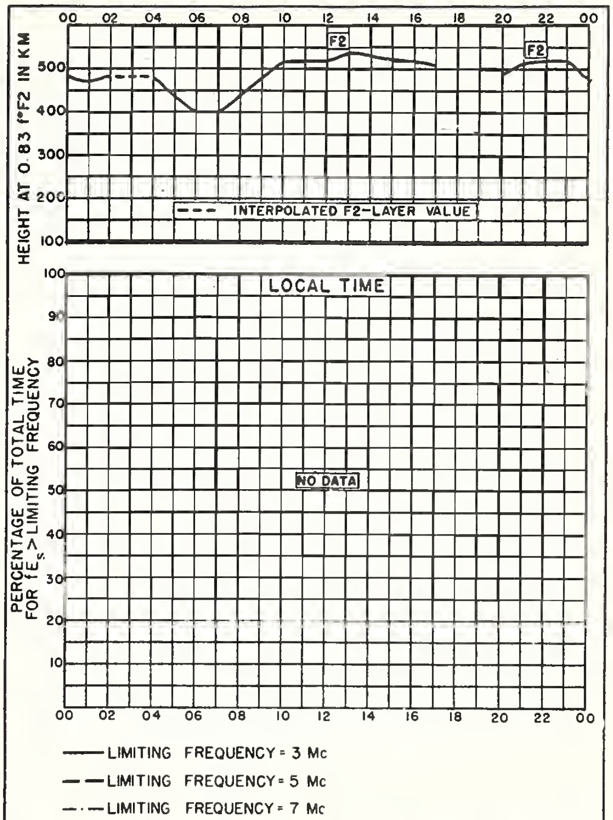

Fig. 53. DELHI, INDIA MAY 1948

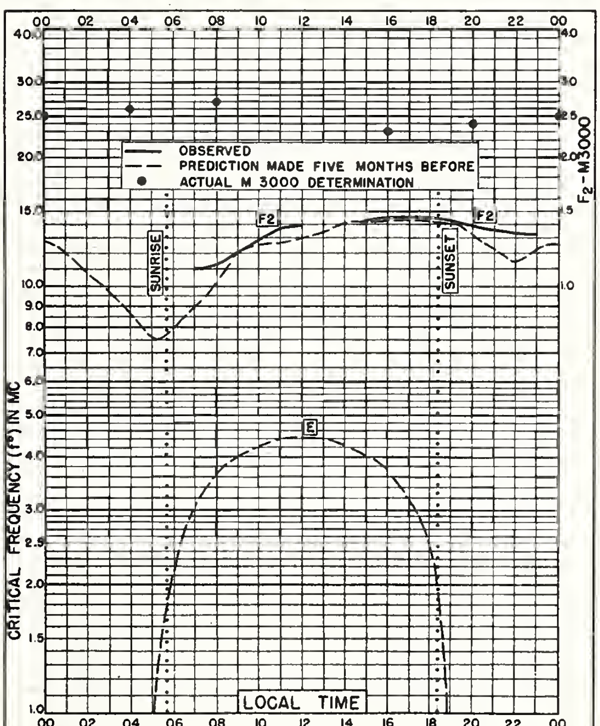

Fig. 54. BOMBAY, INDIA
19.0°N, 73.0°E MAY 1948

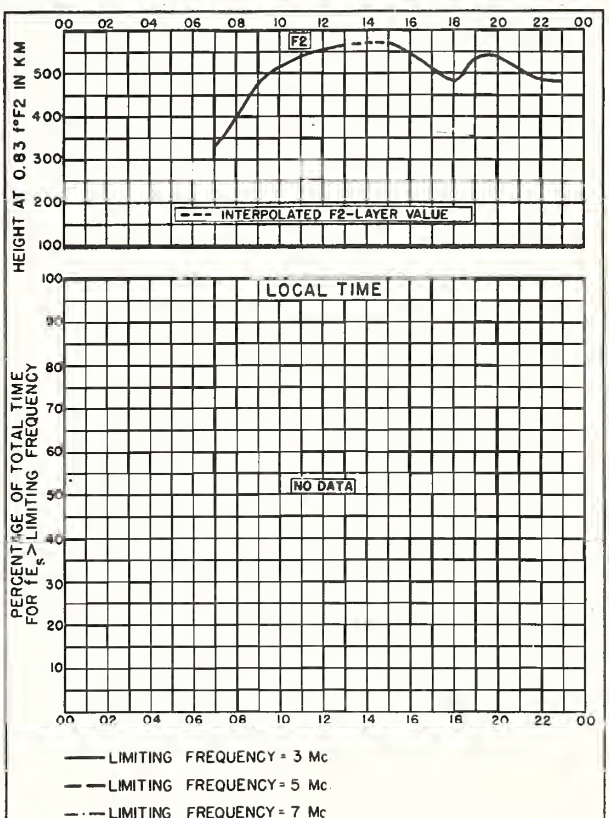

Fig. 55. BOMBAY, INDIA MAY 1948

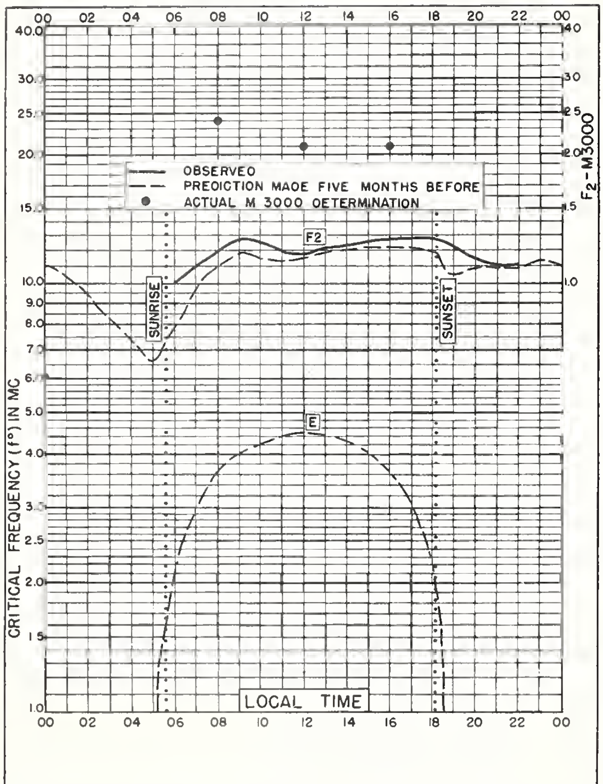

Fig. 56. MADRAS, INDIA
13.0°N, 80.2°E MAY 1948

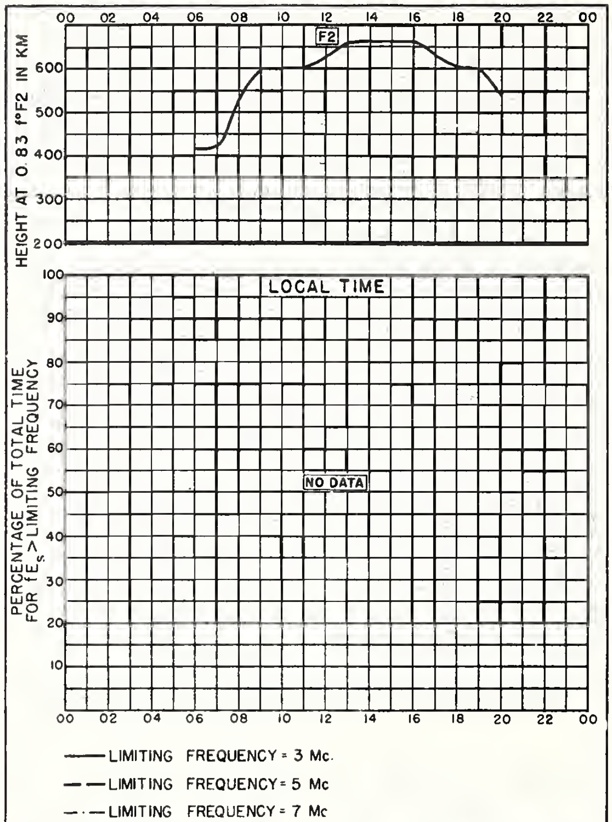

Fig. 57. MADRAS, INDIA MAY 1948

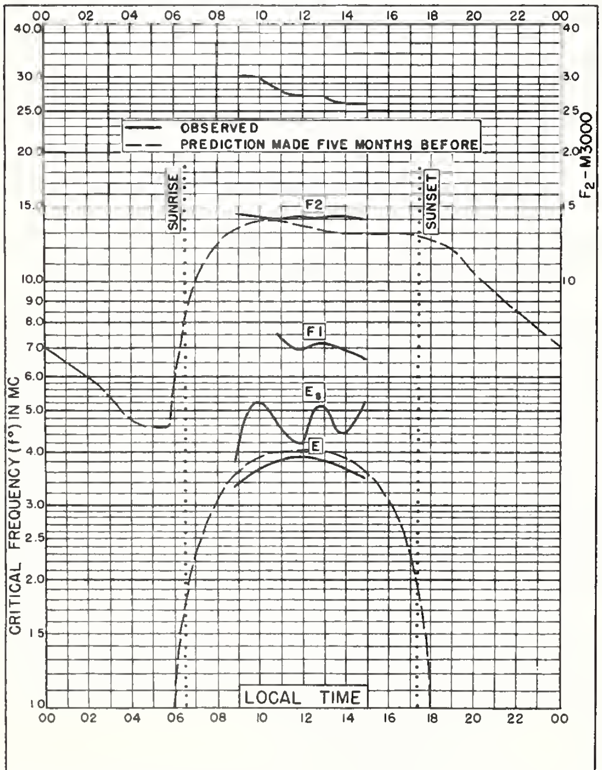

Fig. 58. RAROTONGA I.
21.3°S, 159.8°W MAY 1948

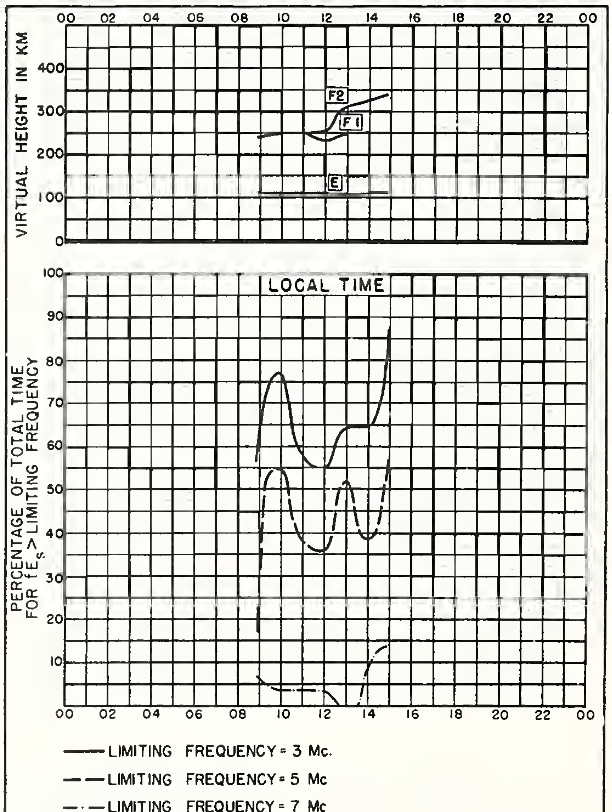

Fig. 59. RAROTONGA I. MAY 1948

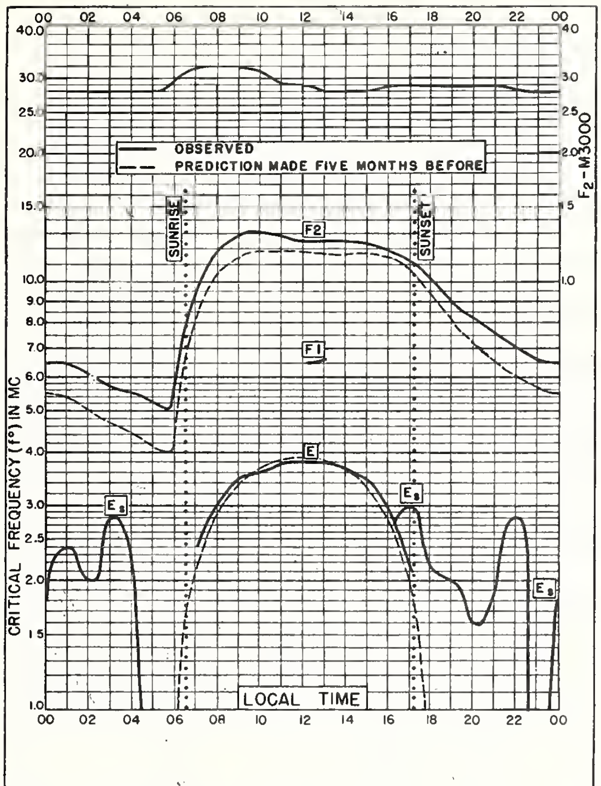

Fig. 60. BRISBANE, AUSTRALIA
27.5°S, 153.0°E MAY 1948

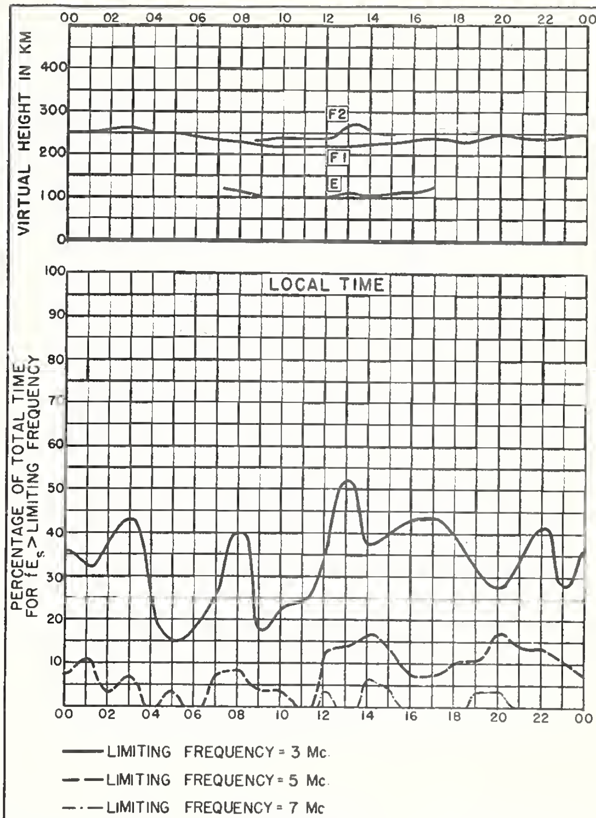

Fig. 61. BRISBANE, AUSTRALIA MAY 1948

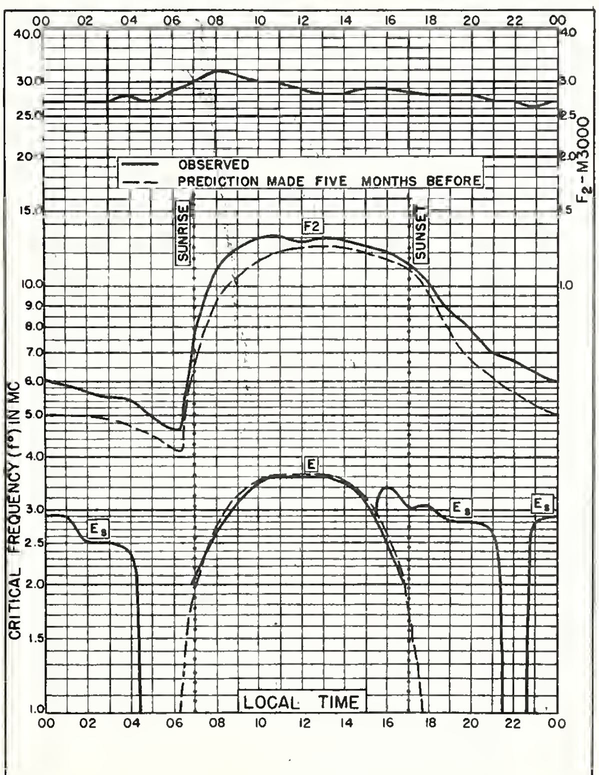

Fig. 62. CANBERRA, AUSTRALIA
35.3°S, 149.0°E MAY 1948

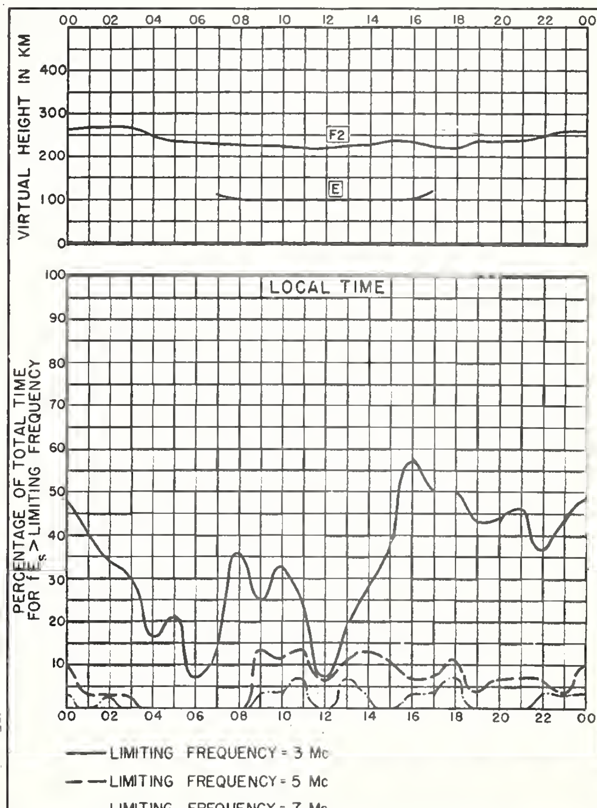

Fig. 63. CANBERRA, AUSTRALIA MAY 1948

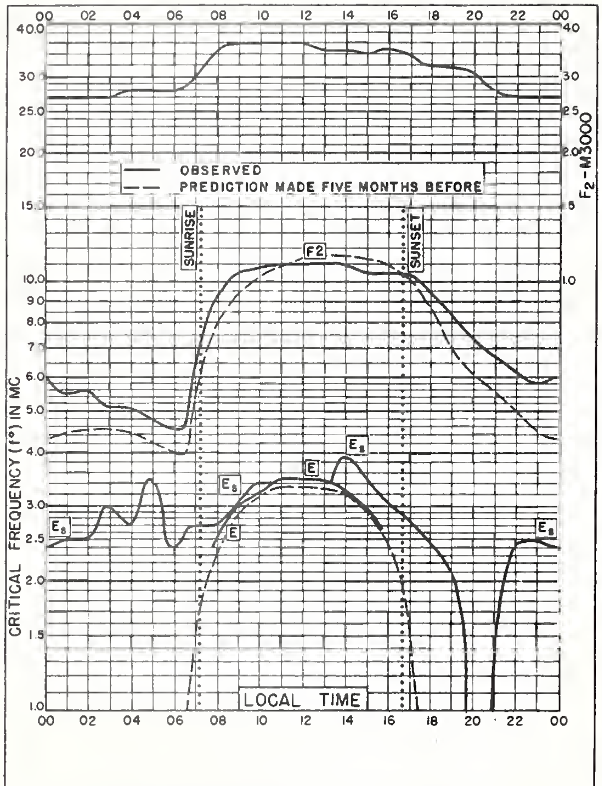

Fig. 64. HOBART, TASMANIA
42.8°S, 147.4°E MAY 1948

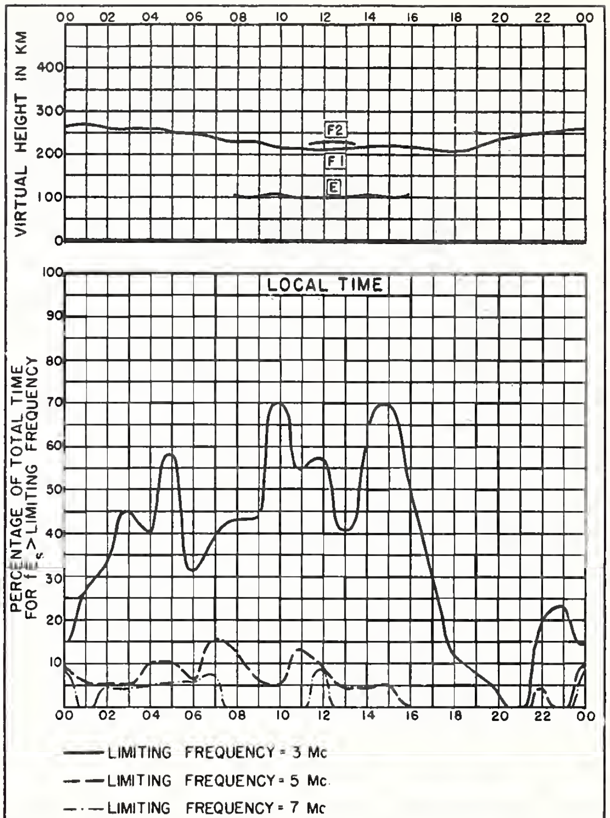

Fig. 65. HOBART, TASMANIA MAY 1948

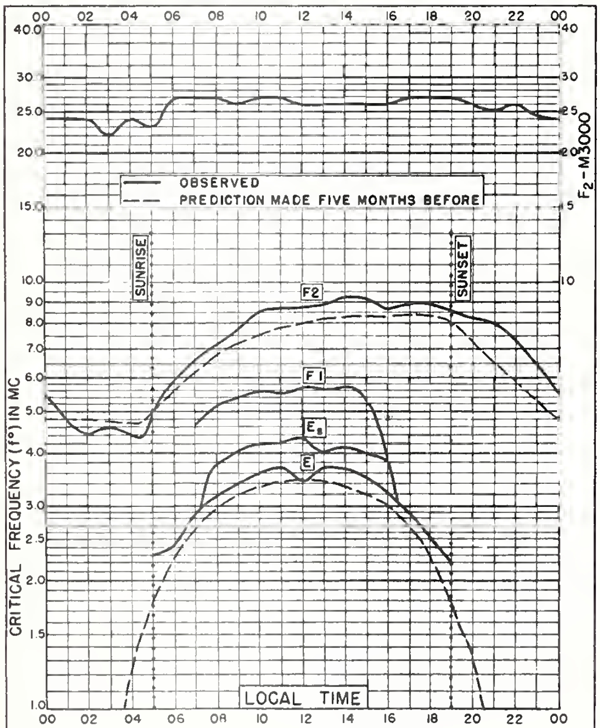

Fig. 66. FRASERBURGH, SCOTLAND
57.6°N, 2.1°W APRIL 1948

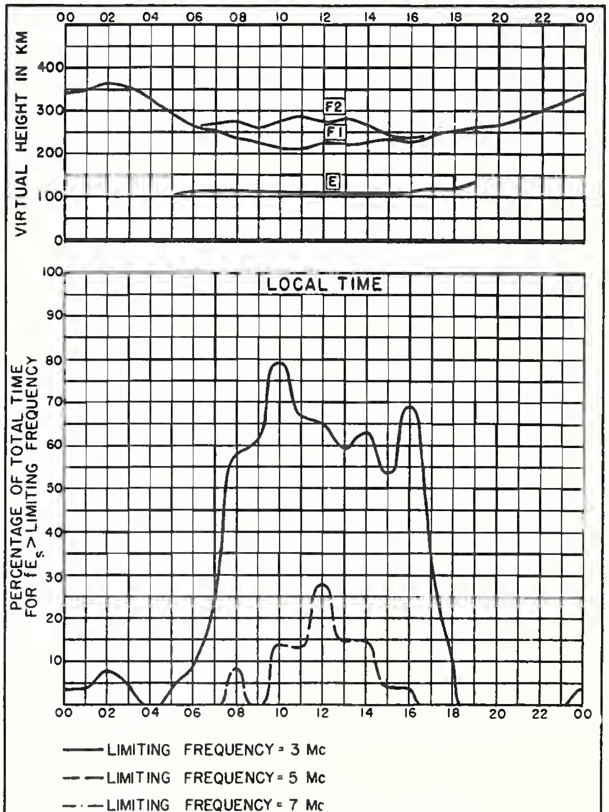

Fig. 67. FRASERBURGH, SCOTLAND APRIL 1948

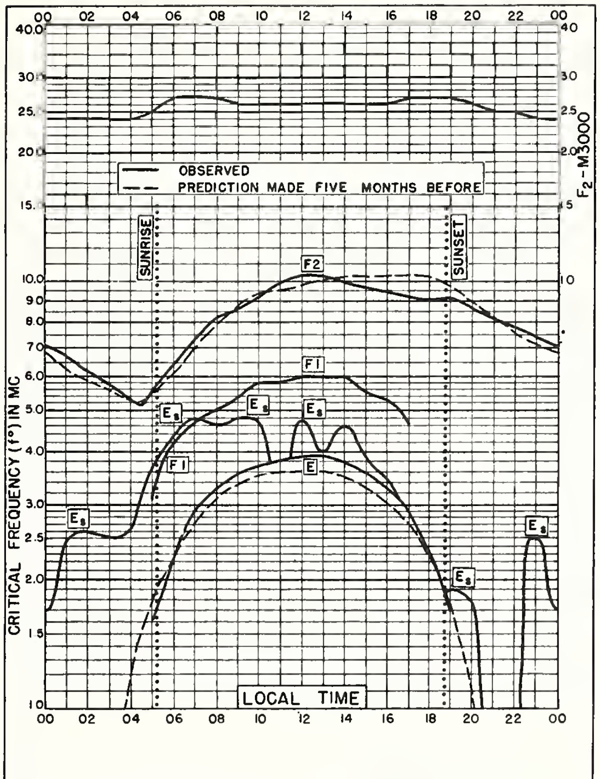

Fig. 68. SLOUGH, ENGLAND
51.5°N, 0.6°W APRIL 1948

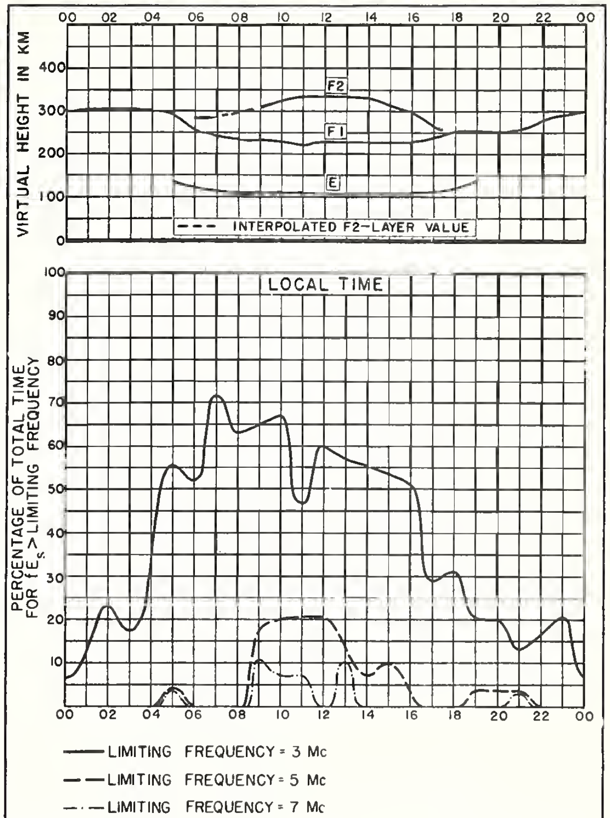

Fig. 69. SLOUGH, ENGLAND APRIL 1948

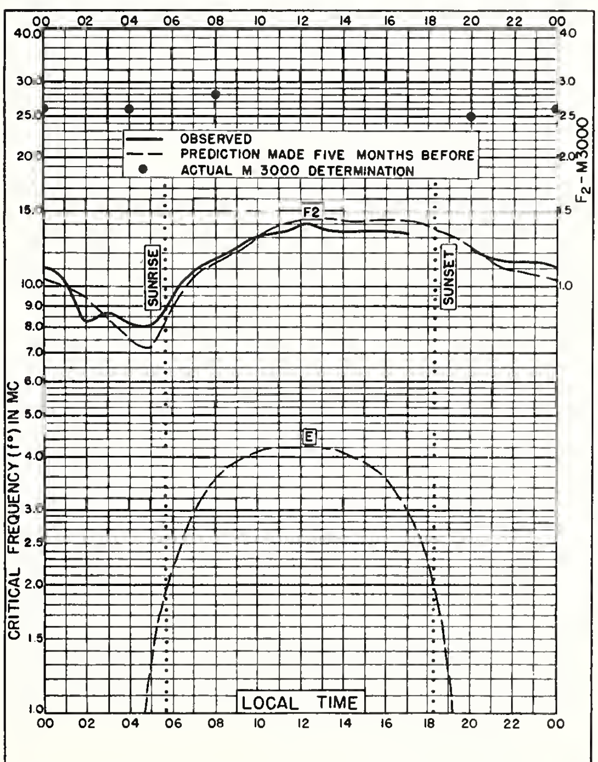

Fig. 70. DELHI, INDIA
28.6°N, 77.1°E APRIL 1948

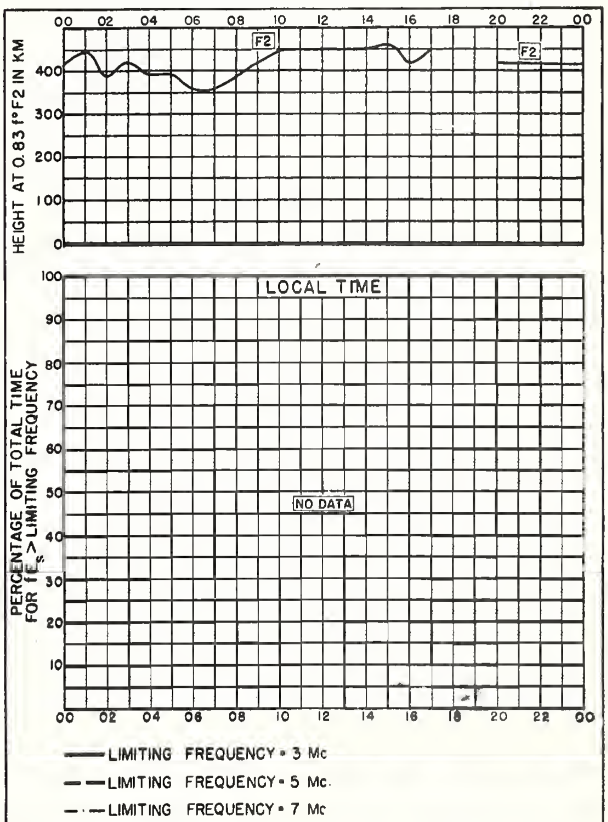

Fig. 71. DELHI, INDIA APRIL 1948

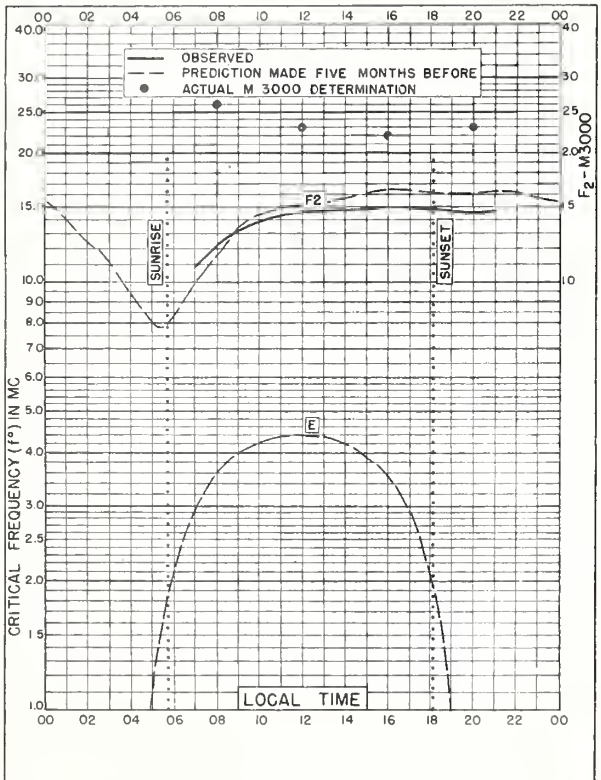

Fig. 72. BOMBAY, INDIA
19. 0°N, 73. 0°E APRIL 1948

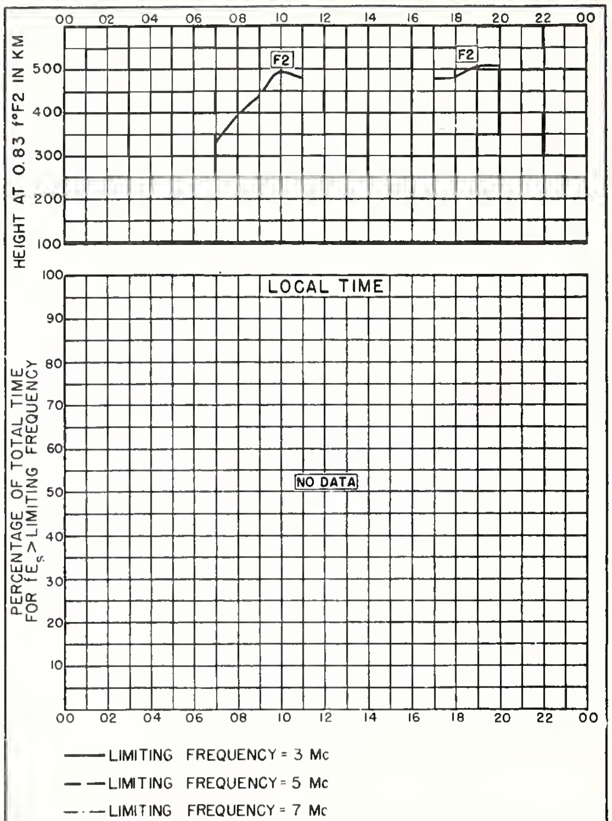

Fig. 73. BOMBAY, INDIA APRIL 1948

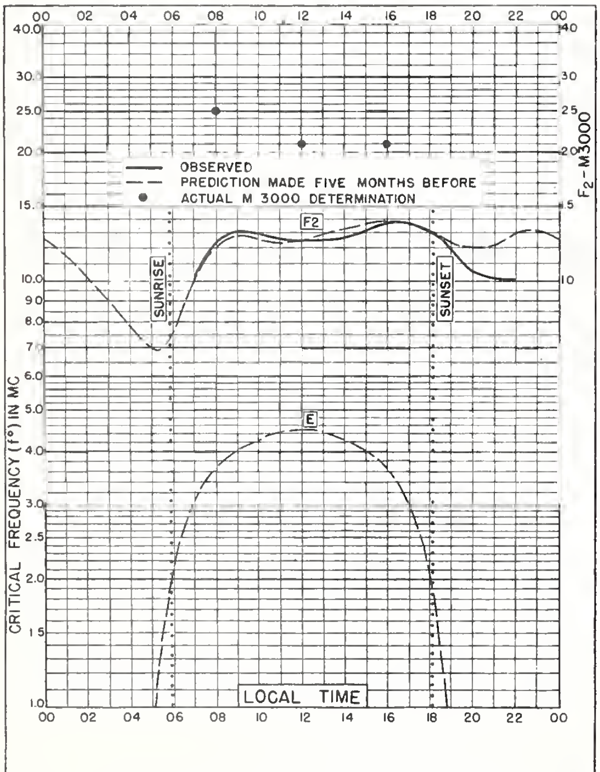

Fig. 74. MADRAS, INDIA
13. 0°N, 80. 2°E APRIL 1948

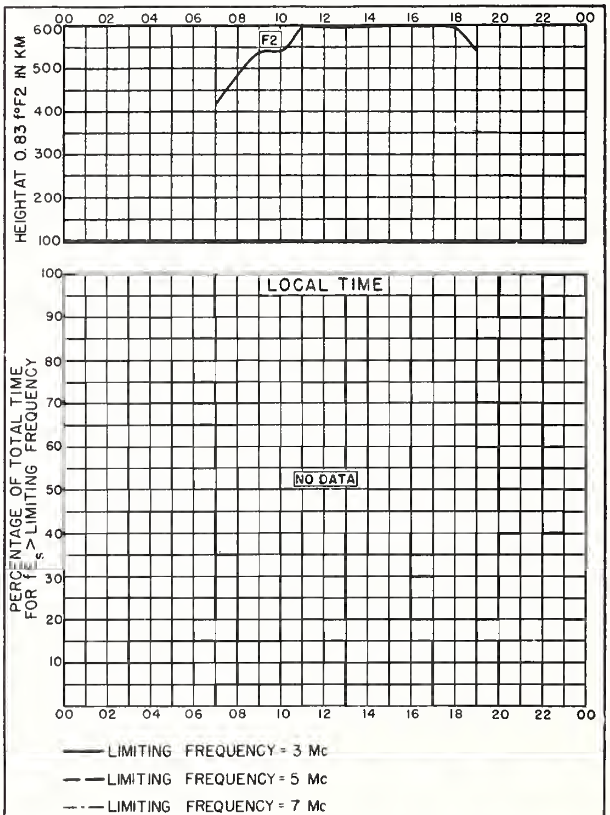

Fig. 75. MADRAS, INDIA APRIL 1948

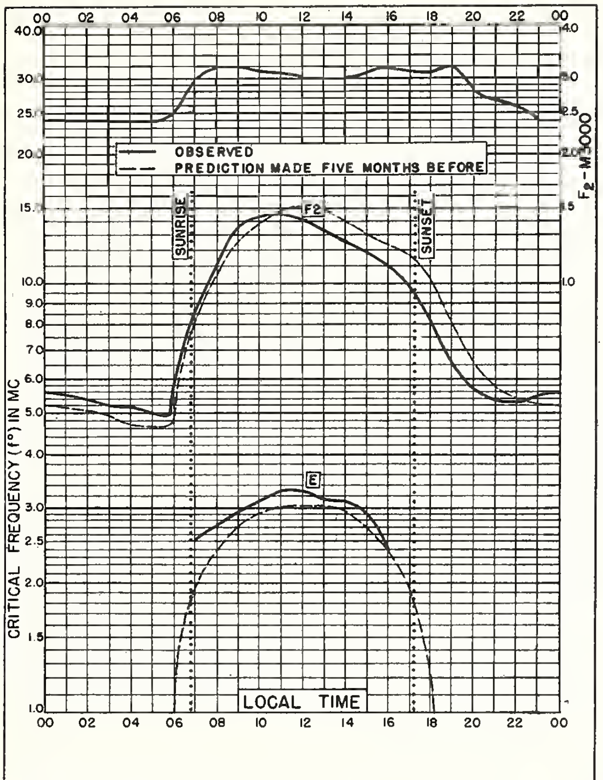

Fig. 76. FALKLAND IS.
51.7°S, 57. 8°W APRIL 1948

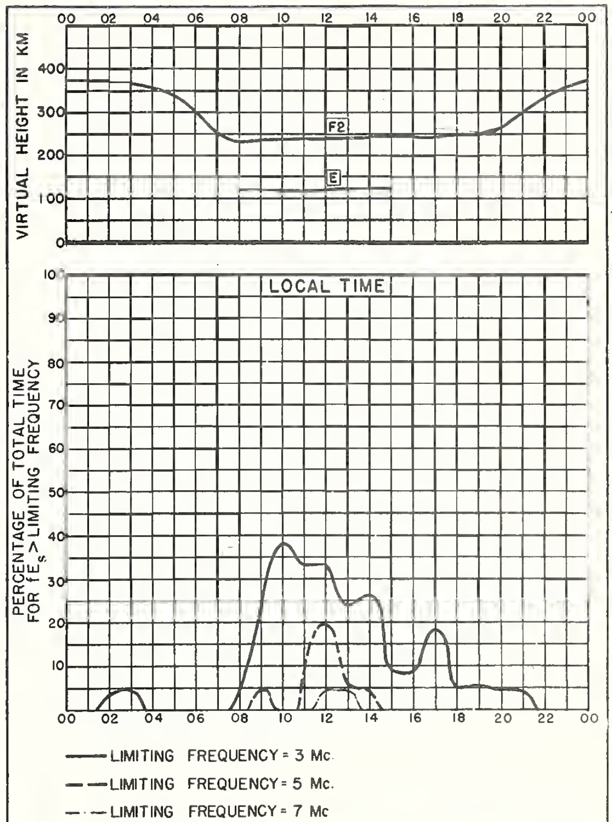

Fig. 77. FALKLAND IS. APRIL 1948

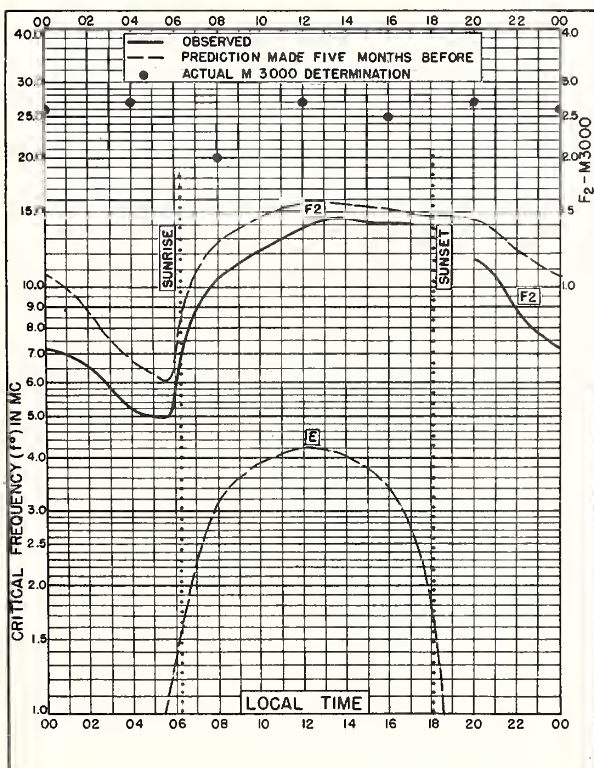

Fig. 78. DELHI, INDIA
28.6°N, 77.1°E MARCH 1948

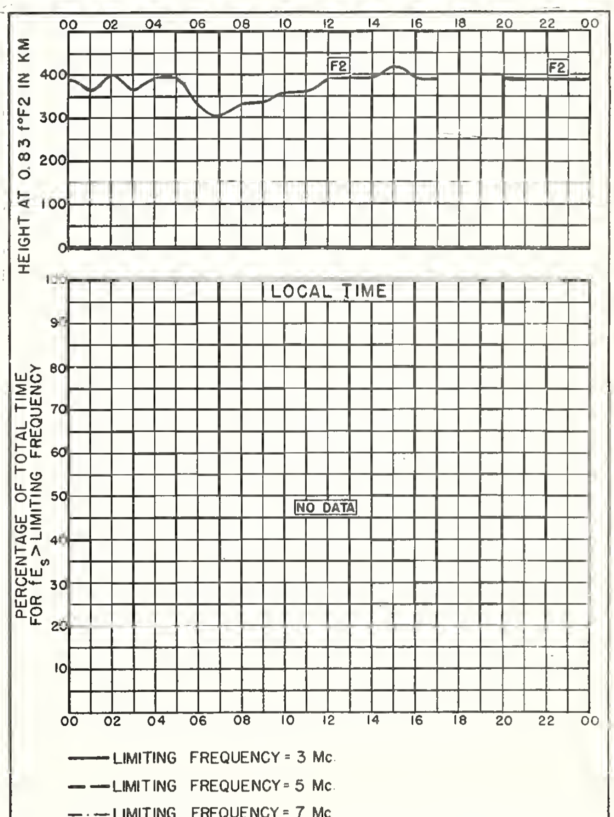

Fig. 79. DELHI, INDIA MARCH 1948

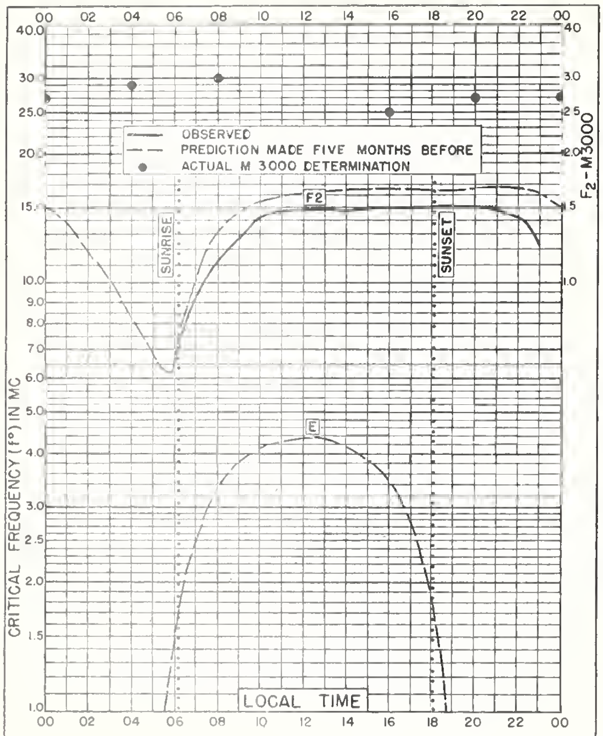

Fig. 80. BOMBAY, INDIA
19.0°N, 73.0°E
MARCH 1948

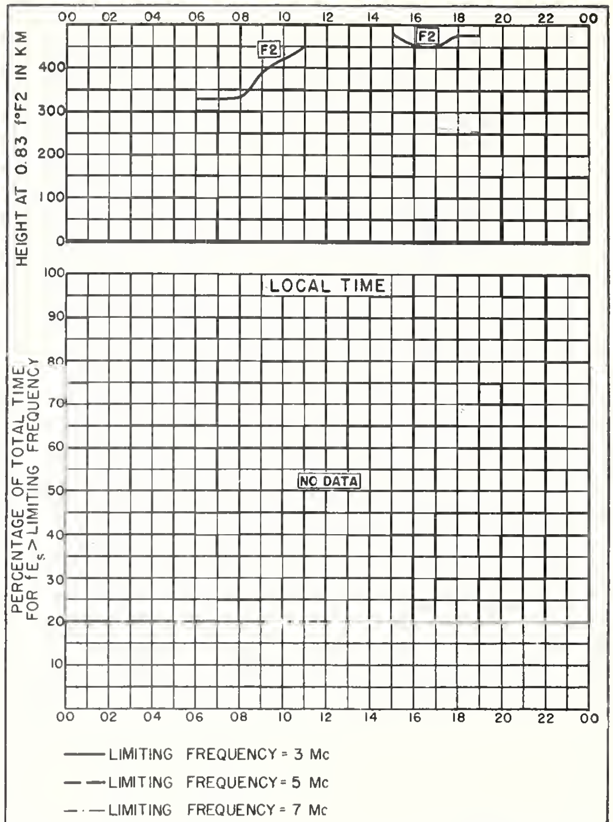

Fig. 81. BOMBAY, INDIA
MARCH 1948

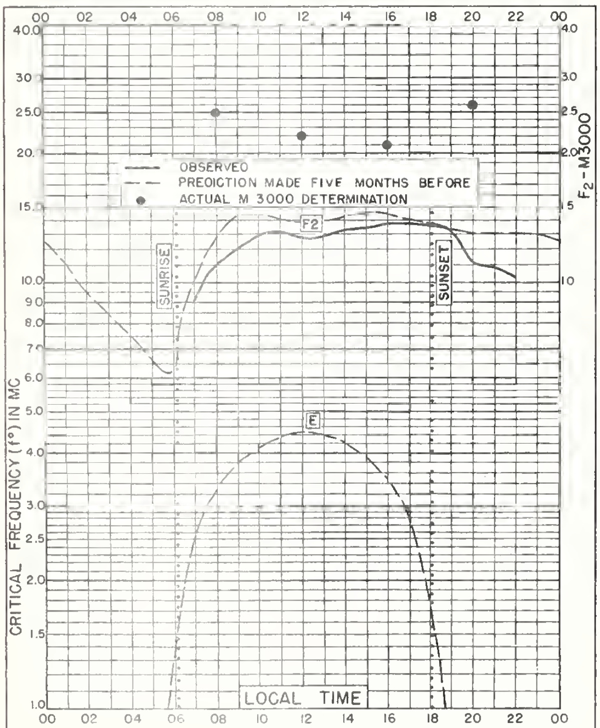

Fig. 82. MADRAS, INDIA
13.0°N, 80.2°E
MARCH 1948

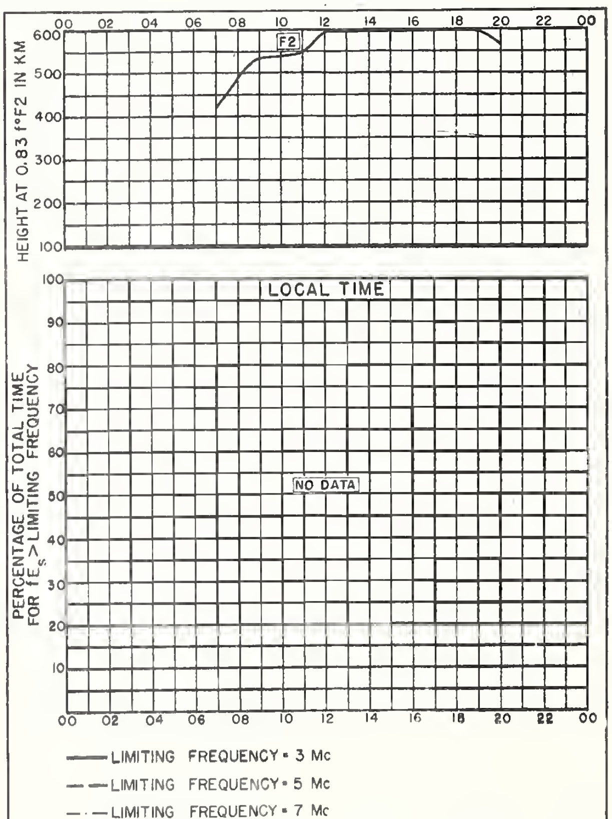

Fig. 83. MADRAS, INDIA
MARCH 1948

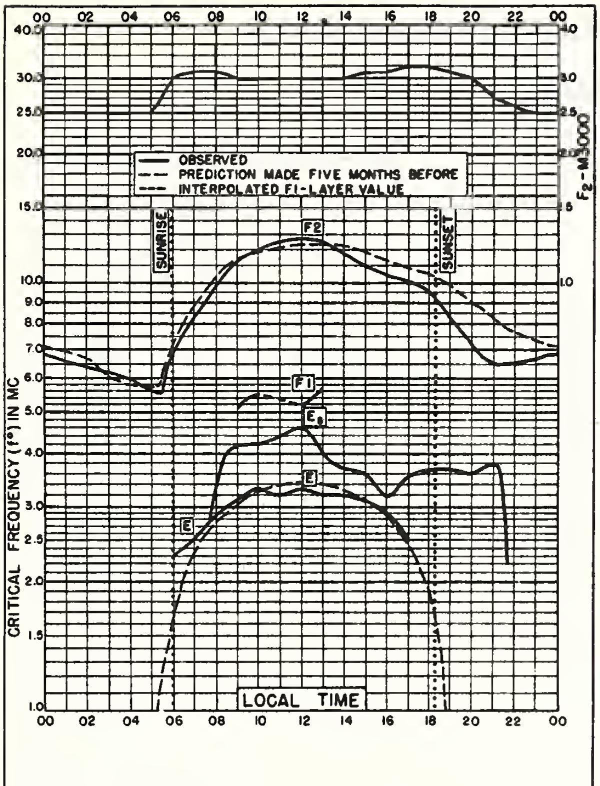

Fig. 84. FALKLAND IS.
51.7°S, 57.8°W MARCH 1948

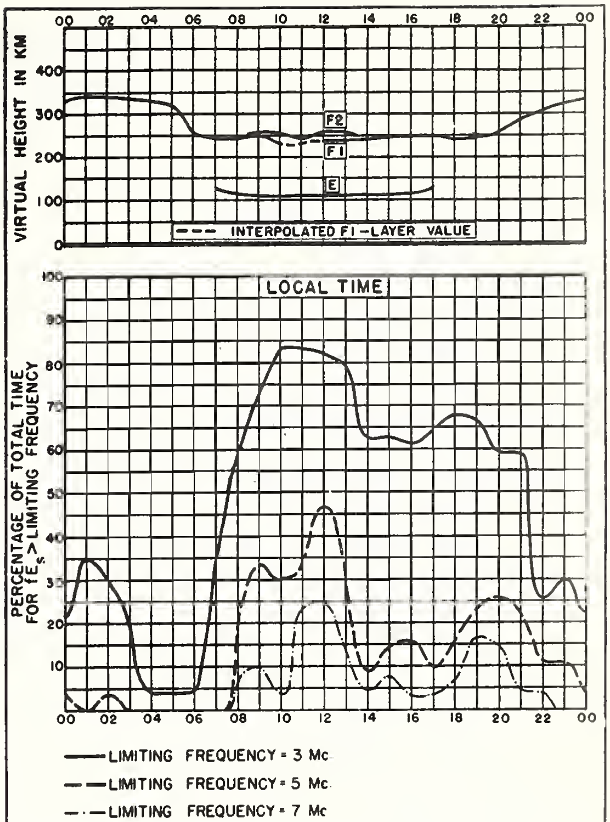

Fig. 85. FALKLAND IS. MARCH 1948

Index of Tables and Graphs of Ionospheric Data

in CRPL-F49

	Table page	Figure page
Baton Rouge, Louisiana		
July 1948	11	44
Bombay, India		
May 1948	16	55
April 1948.	19	60
March 1948.	20	62
Boston, Massachusetts		
July 1948	10	42
Brisbane, Australia		
June 1948	14	51
May 1948	17	57
Canberra, Australia		
June 1948	15	52
May 1948	17	57
Christchurch, New Zealand		
June 1948	15	52
Chungking, China		
June 1948	14	50
Delhi, India		
May 1948	16	55
April 1948.	18	59
March 1948.	19	61
Falkland Is.		
April 1948.	19	61
March 1948.	20	63
Fraserburgh, Scotland		
May 1948	15	53
April 1948.	18	58
Fukaura, Japan		
June 1948	13	48
Guam I.		
July 1948	11	45
Hobart, Tasmania		
May 1948	18	58
Huancayo, Peru		
July 1948	12	47
Lanchow, China		
May 1948	16	54
Madras, India		
May 1948	17	56
April 1948.	19	60
March 1948.	20	62
Nanking, China		
May 1948	16	54

Index (CRPL-F49, continued)

	Table page	Figure page
Palmyra I.		
July 1948	12	46
Peiping, China		
June 1948	13	48
Rarotonga I.		
May 1948	17	56
San Francisco, California		
July 1948	10	43
San Juan, Puerto Rico		
July 1948	11	45
Shibata, Japan		
June 1948	13	49
Slough, England		
May 1948	15	53
April 1948.	18	59
Tokyo, Japan		
June 1948	13	49
Trinidad, Brit. West Indies		
July 1948	12	46
Wakkanai, Japan		
June 1948	12	47
Washington, D. C.		
August 1948	10	42
Watheroo, W. Australia		
June 1948	14	51
White Sands, New Mexico		
July 1948	10	43
Wuchang, China		
July 1948	11	44
Yamakawa, Japan		
June 1948	14	50

CRPL and IRPL Reports

Daily:
Radio disturbance warnings, every half hour from broadcast station WWV of the National Bureau of Standards.
Telephoned and telegraphed reports of ionospheric, solar, geomagnetic, and radio propagation data.

Weekly:
CRPL–J. Radio Propagation Forecast (of days most likely to be disturbed during following month).

Semimonthly:
CRPL–Ja. Semimonthly Frequency Revision Factors for CRPL Basic Radio Propagation Prediction Reports.

Monthly:
CRPL–D. Basic Radio Propagation Predictions—Three months in advance. (Dept. of the Army, TB 11–499–, monthly supplements to TM 11–499; Dept. of the Navy, DNC–13–1 ( ), monthly supplements to DNC–13–1.)
CRPL–F. Ionospheric Data.

Quarterly:
*IRPL–A. Recommended Frequency Bands for Ships and Aircraft in the Atlantic and Pacific.
*IRPL–H. Frequency Guide for Operating Personnel.

Nonscheduled reports:
CRPL–1–1. Prediction of Annual Sunspot Numbers.
CRPL–1–2, 3–1. High Frequency Radio Propagation Charts for Sunspot Minimum and Sunspot Maximum.
CRPL–1–3. Some Methods for General Prediction of Sudden Ionospheric Disturbances.
CRPL–1–4. Observations of the Solar Corona at Climax, 1944–46.
CRPL–1–5. Comparison of Predictions of Radio Noise with Observed Noise Levels.
CRPL–1–6. The Variability of Sky-Wave Field Intensities at Medium and High Frequencies.
CRPL–7–1. Preliminary Instructions for Obtaining and Reducing Manual Ionospheric Records.
NBS Circular 462. Ionospheric Radio Propagation.
NBS Circular 465. Instructions for the Use of Basic Radio Propagation Predictions.

Reports issued in past:
IRPL–C61. Report of the International Radio Propagation Conference, 17 April to 5 May 1944.
IRPL–G1 through G12. Correlation of D. F. Errors With Ionospheric Conditions.
IRPL–R. Nonscheduled reports:
R4. Methods Used by IRPL for the Prediction of Ionosphere Characteristics and Maximum Usable Frequencies.
R5. Criteria for Ionospheric Storminess.
R6. Experimental Studies of Ionospheric Propagation as Applied to the Loran System.
R7. Second Report on Experimental Studies of Ionospheric Propagation as Applied to the Loran System.
R9. An Automatic Instantaneous Indicator of Skip Distance and MUF.
R10. A Proposal for the Use of Rockets for the Study of the Ionosphere.
R11. A Nomographic Method for Both Prediction and Observation Correlation of Ionosphere Characteristics.
R12. Short Time Variations in Ionospheric Characteristics.
R14. A Graphical Method for Calculating Ground Reflection Coefficients.
R15. Predicted Limits for *F*2-layer Radio Transmission Throughout the Solar Cycle.
R16. Predicted *F*2-layer Frequencies Throughout the Solar Cycle, for Summer, Winter, and Equinox Season.
R17. Japanese Ionospheric Data—1943.
R18. Comparison of Geomagnetic Records and North Atlantic Radio Propagation Quality Figures—October 1943 Through May 1945.
R19. Nomographic Predictions of *F*2-layer Frequencies Throughout the Solar Cycle, for June.
R20. Nomographic Predictions of *F*2-layer Frequencies Throughout the Solar Cycle, for September.
R21. Notes on the Preparation of Skip-Distance and MUF Charts for Use by Direction-Finder Stations. (For distances out to 4000 km.)
R22. Nomographic Predictions of *F*2-layer Frequencies Throughout the Solar Cycle, for December.
R23. Solar-Cycle Data for Correlation with Radio Propagation Phenomena.
R24. Relations Between Band Width, Pulse Shape and Usefulness of Pulses in the Loran System.
R25. The Prediction of Solar Activity as a Basis for the Prediction of Radio Propagation Phenomena.
R26. The Ionosphere as a Measure of Solar Activity.
R27. Relationships Between Radio Propagation Disturbance and Central Meridian Passage of Sunspots Grouped by Distance From Center of Disc.
R28. Nomographic Predictions of *F*2-layer Frequencies Throughout the Solar Cycle, for January.
R30. Disturbance Rating in Values of IRPL Quality-Figure Scale from A. T. & T. Co. Transmission Disturbance Reports to Replace T. D. Figures as Reported.
R31. North Atlantic Radio Propagation Disturbances, October 1943 Through October 1945.
R32. Nomographic Predictions of *F*2-layer Frequencies Throughout the Solar Cycle, for February.
R33. Ionospheric Data on File at IRPL.
R34. The Interpretation of Recorded Values of *fEs*.
R35. Comparison of Percentage of Total Time of Second-Multiple *Es* Reflections and That of *fEs* in Excess of 3 Mc.
IRPL–T. Reports on tropospheric propagation:
T1. Radar operation and weather. (Superseded by JANP 101.)
T2. Radar coverage and weather. (Superseded by JANP 102.)
CRPL–T3. Tropospheric Propagation and Radio-Meteorology. (Reissue of Columbia Wave Propagation Group WPG–5.)

*Items bearing this symbol are distributed only by U. S. Navy. They are issued under one cover as the DNC-14 series.